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TRICKLE MOUNTAIN
WILDLIFE HABITAT PLAN

CO-05WHA-3

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TRICKLE MOUNTAIN WILDLIFE HABITAT AREA

CC-05WHA-3

Prepared by:

Don Pritchard
Clay Bridges
Mark Strong

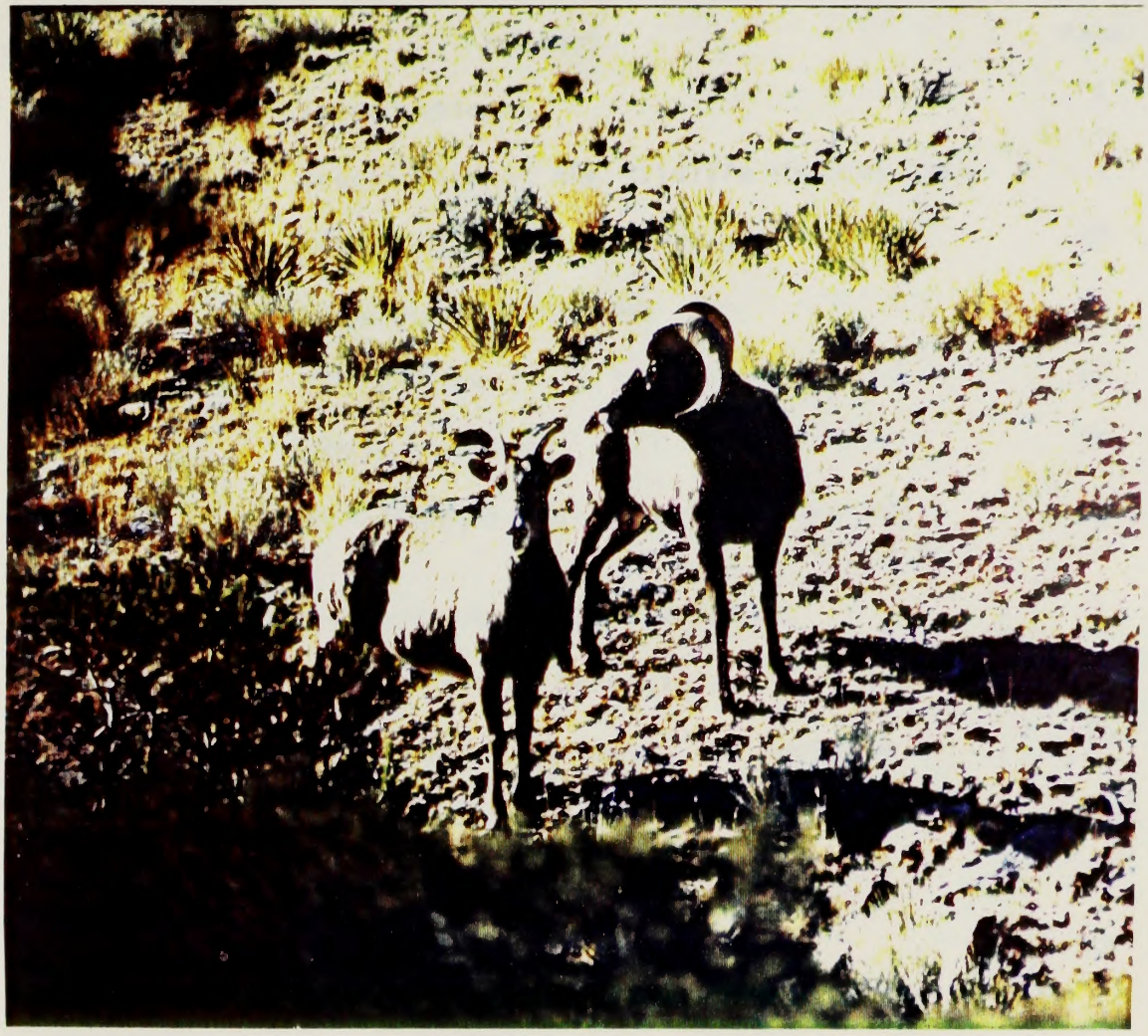
September 23, 1977

TRICKLE MOUNTAIN HABITAT MANAGEMENT PLAN

CO-05 WHA-3

This Habitat Management Plan was prepared by the Bureau of Land Management in cooperation with the U.S. Forest Service and Colorado Division of Wildlife. Acknowledgement is also given to the Rocky Mountain Bighorn Sheep Society, Colorado Chapter, for their field review and comments.

The Trickle Mountain Wildlife Habitat Management Plan is a dynamic document, which will be updated and revised as new management direction and information become available. The Plan serves to prescribe land management and related species population management guidance for the mutual benefit of wildlife and other resources and their uses. This plan is proposed for Sikes Act implementation and to this end, we hereby approve of this plan and its distribution for public use.



ROCKY MOUNTAIN BIGHORN SHEEP

(*Ovis canadensis*)

TRICKLE MOUNTAIN HMP

Table of Contents

Section	Subject	Page
A.	Introduction	1
1.	Description of the Wildlife Habitat Area	1
2.	Status of Wildlife Species	18
B.	Management Objectives	45
C.	Constraints	48
D.	Planned Actions	49
E.	Coordination With Other Programs and Agencies	62
F.	Environmental Analysis Record	75
G.	Implementation Schedule and Cost Estimate	81
H.	Management Evaluation and Revision	87
I.	Public Affairs	88
J.	Concurrence and Approval	91
K.	Appendix	92

FIGURES

Number	Subject	Page
1	General Location Map	2
2	Surface Ownership	3
3	Habitat Sites	10
4	Bighorn Sheep Distribution	24
5	Elk Distribution	27
6	Mule Deer Distribution	30
7	Pronghorn Distribution	31
8	Riparian and Aquatic Exclosures	38
9	Access Plan	54
10	Habitat Improvement Locations	56
11	BLM's Allotment Boundaries	65
12	Proposed Land Exchange	71

TABLES

Number	Subject	Page
1	Average Temperatures	6
2	Precipitation	6
3.	Habitat Sites	11
4	Bighorn Sheep Harvests	21
5	Bighorn Sheep Foods	23
6	Elk Harvest	26
7	Elk Foods	28
8	Deer Harvest	29
9	Pronghorn Harvest	32
10	Aquatic Habitat	35
11	Fish Species	36
12	Aquatic Habitat Condition	37
13	Habitat Improvement Projects	55
14	AMP Data	66
15	Additional Support Requirements	72
16	Required Studies	87

PHOTOS

Number	Subject	Page
1	Frontispiece	ii
2	Rimrock Cliffs	7
3	Rimrock Cliffs	7
4	Grassy Mesa Tops	8
5	Shortgrass Habitat Site	8
6	Midgrass Habitat Site	14
7	Coniferous Forest Habitat Site	14
8	Pinon Juniper Habitat Site	16
9	Aspen Habitat Site	16
10	Fresh Meadow Habitat Site	19
11	Raptor Nest in Rimrock	34
12	Enclosure 1, Lower End	39
13	Enclosure 1, Middle Section	39
14	Enclosure 2, Lower End	40
15	Enclosure 2, Upper End	40
16	Enclosure 3, Lower End	41
17	Enclosure 3, Upper End	41
18	Aquatic and Riparian Habitat on Sheep Creek	42
19	Old Beaver Activity on Sheep Creek	42
20	Typical Beaver Ponds on Tuttle	43
21	Riparian Community Found on Tuttle Creek	43
22	Beaver Damage Present on Tuttle Creek	44

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

CHECKLIST FOR PREPARATION AND REVIEW OF HABITAT MANAGEMENT PLANS

State: Colorado
District: Canon City
Resource Area: San Luis
Prepared by: Strong, Bridges, Prichard

HABITAT MANAGEMENT PLAN AREA NAME AND NUMBER	SURNAME	DATE
1. Cooperative Agreement completed		
2. Preliminary meeting(s) with officials of the State Department of Fish and Game *(or other appropriate cooperators)* to discuss tentative HMP and wildlife objectives		
3. Endangered Species Act Compliance Report completed by		
4. HMP draft prepared by	Strong Bridges Prichard	8-22-77
5. Reviewed by District Wildlife Specialist	Bridges	8-30-77
6. EAR on draft HMP prepared by	Bridges	8-22-77
7. HMP redrafted based on adopted recommendations *(If appropriate, prepare second copy.)*	Bridges	9-23-77
8. Reviewed by District Specialists		
Range — Jake	W. Jakubowski	8-30-77
Wild Horse(s) and Burro(s) — Jake	W. Jakubowski	8-30-77
Lands — Parker	S. Parker	9/16/77
Minerals — Huebschman	R. Huebschman	8/31/77
Watershed — Werts	Werts	8/31/77
Forestry — Jack D.	Jack Cossett	9/2/77
Recreation — Gary S.	Sharpe	8-30-77
Cultural — Beard.	Jay Beard	9-8-77
Visual — Gary S.	Sharpe	8-30-77
Fire Management — Harold.	NLM	9/7/77
Area Manager — Gene V.	~~Gene R. Keith~~	~~9/19/77~~
Support (Specialists) — Gene Keith	~~Gene R. Keith~~	~~9/19/77~~
9. Review of draft by Chief, Resource Management	S. Parker	11/1/77
10. Final review *(if appropriate)* by State Director		
✓ State Office		10-3-77
Service Center		
Other *(specify)*		
11. Approved by State wildlife agency authorized officer *(if appropriate)*		
12. Approved by District Manager		
13. Approval of State Director *(if appropriate)*		

GPO 834-505

Form 6520-1 (December 1976)

INTRODUCTION

A. Introduction

1. Description of the Trickle Mountain Wildlife Habitat Area

As a result of the multiple use planning efforts (Unit Resource Analysis - URA and Management Framework Plan - MFP) conducted within the Saguache Planning Unit, it was decided to complete and implement a Habitat Management Plan (HMP) for the Trickle Mountain area as soon as possible.

The Trickle Mountain Wildlife Habitat Area (WHA) is located 15 miles west of the town of Saguache in Saguache County, south-central Colorado (see Figure 1). This area is in the northwest corner of the San Luis Valley. The boundaries for this WHA were established in 1974, as a result of an interagency coordination meeting involving the Bureau of Land Management (BLM), U.S. Forest Service (USFS) and the Colorado Division of Wildlife (DOW). These boundaries were chosen because they contain the important habitat components of the Trickle Mountain bighorn sheep herd; summer range, winter range and lambing range. The WHA is bounded on the north and west by the Continental Divide; on the south by Saguache Creek and Rabbit Canyon and on the east by the ridge between Findley Gulch and Dry Gulch.

For the purposes of this report, all lands that are administered by the BLM will be referred to as Public Lands. Land ownership within this WHA include: 9,170 acres of private land, mostly along the creek bottoms; two state owned sections totalling 1280 acres; 52,565 acres of Public Land in the lower and intermediate elevations; and 84,215 acres administered by the Rio Grande National Forest, USFS, from the intermediate elevations to the highest points of the WHA (see Figure 2). The WHA encompasses a total of 147,230 acres.

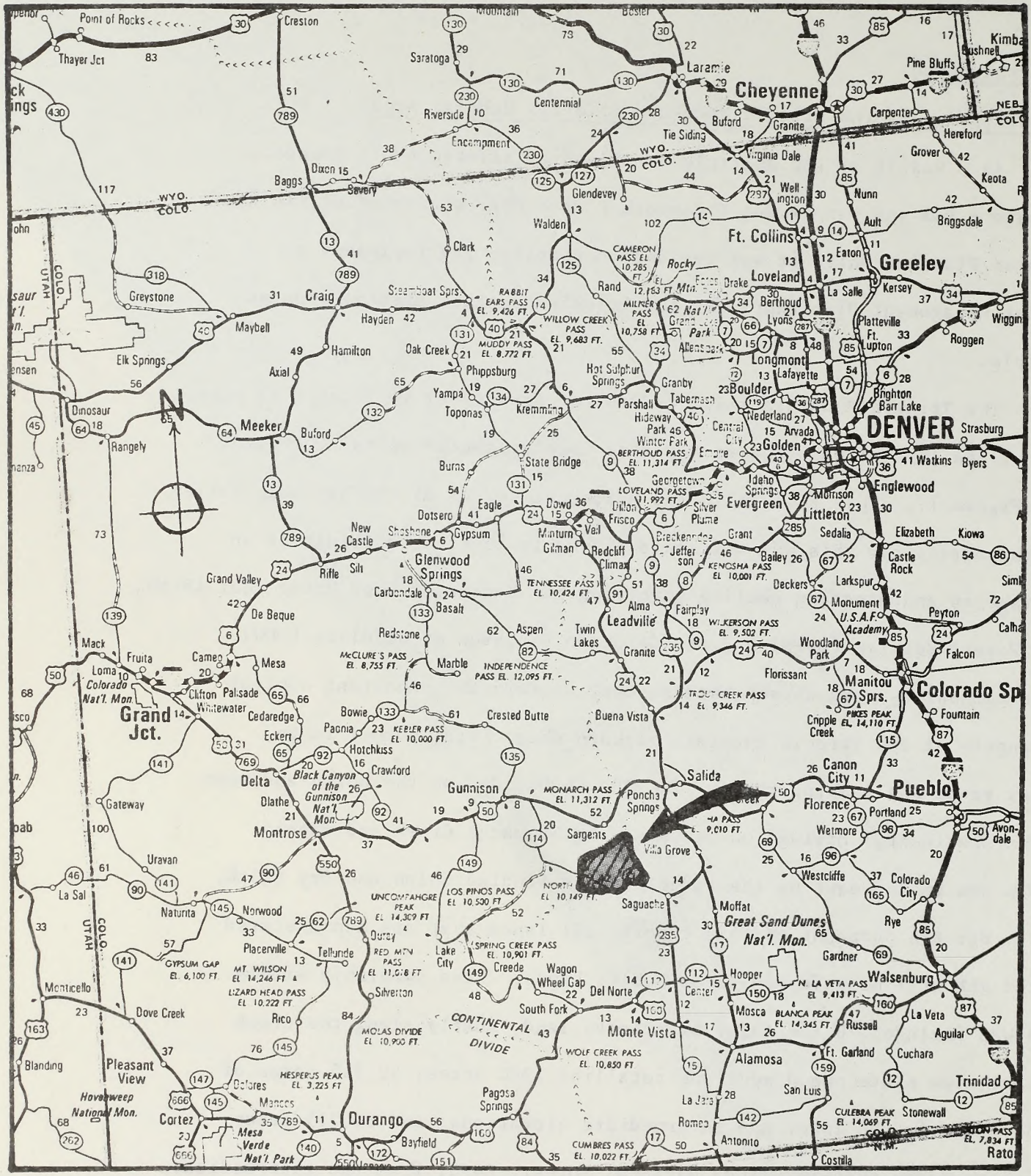
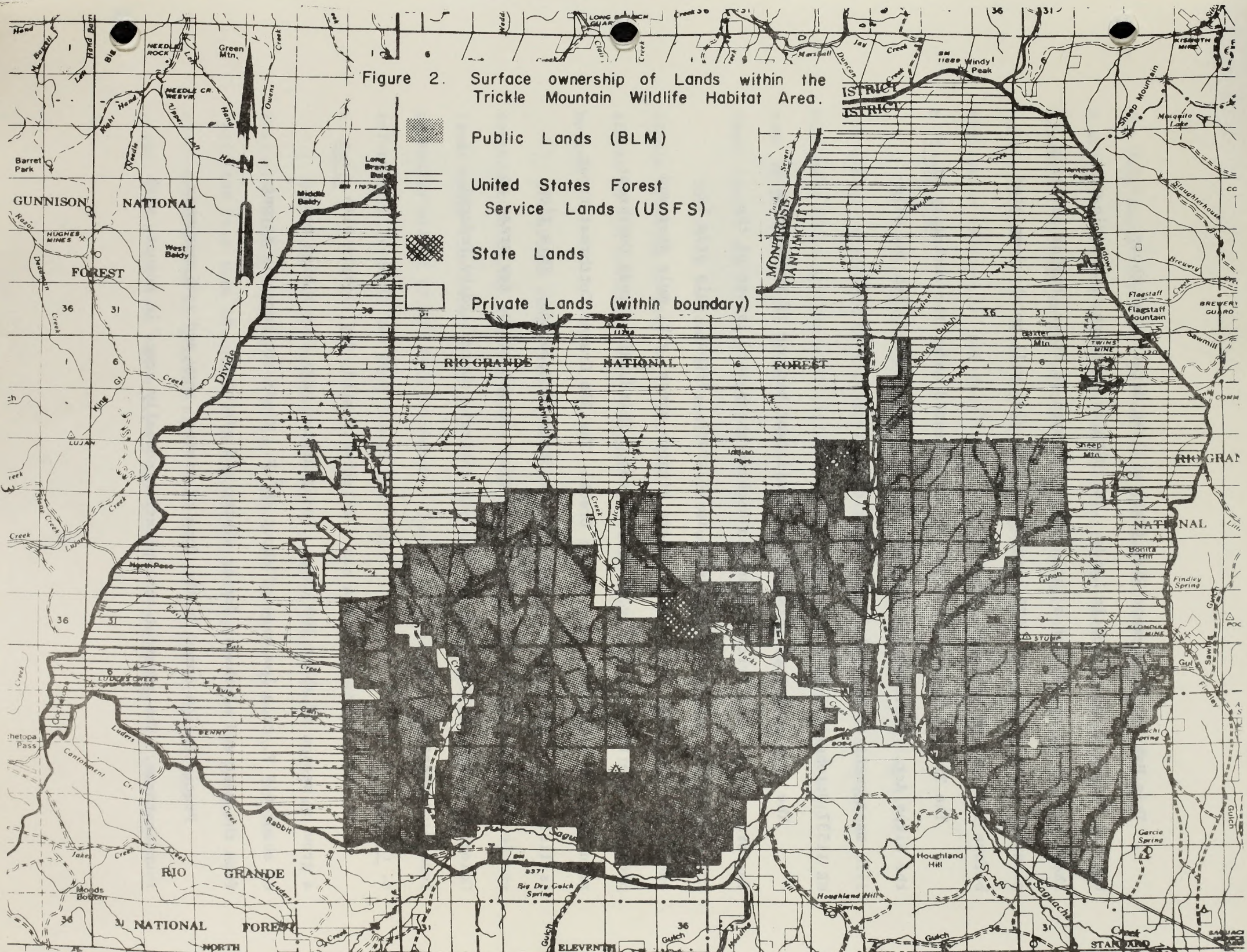


Figure 1. General orientation map with the Trickle Mountain Wildlife Habitat Area


Public Lands (BLM)
United States Forest Service Lands (USFS)
State Lands
Private Lands (within boundary)
GUNNISON NATIONAL FOREST
RIO GRANDE NATIONAL FOREST
RIO GRANDE NATIONAL FOREST
MONTROSE
Barret Park
Green Mtn.
Windy Peak
Sheep Mountain
Flagstaff Mountain
Sheep Mtn.
Bonita Hill
Houghland Hill
Big Dry Gulch Spring
ELEVENTH
STANDARD
Divide
Rabbit
Luders
Saguache
Cantonment Cr
Moods Bottom
Garcia Spring
Findley Spring
Flagstaff
Brewery
Slaughterhouse
Mosquito Lake
Sawmill
Twins Mine
Bloomer Mine
Stubb
Lujan
Middle Baldy
West Baldy
Long Branch Baldy
Needle Rock
Needle Cr Resvr
Hughes Mines
Vulcan
Jacks
Creek
Gulch
Canyon
Hill
Mesa
Meadows
Pass
Park
Spring
Mine
Brewery Guard
Sawmill
Comm
Rio Gran
Stubb
Fox
Saguache
Creek
Gulch

This Habitat Management Plan (HMP) will be directed at those habitat values found on Public Lands. The USFS is planning to coordinate their portion of the WHA at a later date. Because of other, higher priority planning commitments, the USFS portion of this plan will not be completed before 1979 at the earliest.

The Trickle Mountain HMP will be implemented under the authority of the Sikes Act. (This act is designed to promote effective fish and wildlife management on Federal lands. Public Law 93-452, 93rd Congress, HR 11537 October 18, 1974.)

The development of this HMP is significant because of three major factors. First, the Trickle Mountain bighorn sheep herd is one of the most productive and healthiest herds in Colorado. Second, this area is one of the few areas in the world where bighorn sheep, elk, mule deer and pronghorn are found utilizing the same areas. Third, Rio Grande Cutthroat trout will be introduced into Tuttle Creek. The Rio Grande Cutthroat trout is listed as a "threatened species" by the State of Colorado. This fish species is unique to Colorado and Tuttle Creek is one of the few areas in Colorado to have suitable habitat that is entirely controlled by Federal land management agencies.

a. Climate

The Trickle Mountain WHA has a relatively mild, dry climate with a growing season of about 100 days. Temperatures vary from a high mean of about 65° F. to a low mean of about 19° F. Winds are normally strong from the west and northwest during winter and spring.

Precipitation comes in the form of winter snow and spring-summer thunderstorms. The greatest precipitation normally comes in August, with

the July-August-September period being the wettest of the year. Tables 1 and 2 show recent temperature and precipitation data for the town of Saguache. Average annual precipitation for the BLM portion of the WHA varies from 8" - 16" depending on elevation and local topography. Precipitation exceeds 35" per year in the highest elevations, on Antero Peak.

b. Topography

The Public Lands are characterized by mesas topped by rolling hills and steeply dissected by drainages. Volcanic rock outcrops are associated with mesa edges as "rimrock" cliffs and ledges (photos 2 and 3) and with some ridge tops. Open grassy slopes are common on the mesa tops and lower slopes and hilltops (photo 4).

The creek bottoms are mostly narrow with flat floodplains and talus slopes climbing steeply up to the mesa rimrocks. The area, generally, slopes to the southeast until Saguache Creek empties into the San Luis Valley bottom.

Elevations range from 7,840 feet along Saguache Creek, in the southeast to 13,266 feet on Antero Peak. Elevations on BLM administered lands range from about 8,000 ft. to 10,400 ft. The Continental Divide is generally around 12,000 feet elevation. For more detailed topographic information, consult the USGS topographic maps.

c. Soils

Soils are mostly Mountain Lithosols from volcanic parent material. They are usually dry, well-drained, shallow and sandy or gravelly. Depths vary from less than 18 inches over impervious bedrock to 18 to 36 inches over coarse gravel or glacial till. Textures are medium to light; and gravel cobble or stone may occur on the surface or throughout the profile.

Table 1. Average temperatures for the Trickle Mountain WHA (in degrees Fahrenheit). Data is for Saguache, CO.

Year	Months												Annual Average
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	
1969	25.6	26.7	31.2	45.3	54.3	56.4	65.1	64.5	55.9	39.9	33.1	24.3	43.5
1970	23.4	32.3	32.5	37.6	50.9	57.8	65.4	65.4	53.1	41.6	33.6	25.2	43.2
1971	23.2	27.4	34.1	40.9	48.4	59.7	62.9	63.0	53.1	44.2	30.1	18.7	42.1
1972	18.4	29.3	39.1	45.1	50.7	60.2	62.9	61.1	53.8	45.1	22.1	12.7	41.7
1973	9.9	16.9	31.2	37.1	49.6	57.2	61.2	59.7	51.0	42.8	30.9	20.8	39.0
1974	11.6	14.3	35.1	37.8	50.5	60.0	63.4	58.9	53.0	44.5	30.0	15.5	39.6
1975	11.3	20.7	30.9	36.6	45.8	55.2	60.9	58.3	50.1	41.0	25.6	16.5	37.7
1976	13.8	29.6	33.0	42.1	51.4	56.8	63.7	58.3	52.9	40.7	32.4	15.6	40.9
1977	14.2	25.0	29.3										

Table 2. Total precipitation (in inches) for the Trickle Mountain WHA. Data is for Saguache, CO.

Year	Months												Annual Average
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	
1969	.20	.28	.39	.17	.90	2.36	3.19	2.46	1.65	2.80	.02	.36	14.78
1970	.03	T	.71	.10	.33	.55	.30	1.39	2.13	.22	.03	.00	5.79
1971	.30	.38	T	.53	.65	.19	2.18	1.36	1.03	.57	.88	.24	8.31
1972	.54	T	.38	.00	.27	.63	.69	1.04	.33	1.91	1.62	.65	8.06
1973	.04	T	.49	.40	.75	.40	3.64	1.57	.51	.47	.00	.35	8.62
1974	.64	.11	.52	.25	T	.17	.45	1.34	.63	.93	.79	.49	6.32
1975	.60	.52	.86	1.11	.01	.67	1.39	.76	.51	.30	1.05	.06	7.84
1976	.00	.33	.58	1.22	1.97	T	1.10	2.32	1.94	.40	.61	T	10.47
1977	.22	.16	T										

T = Trace

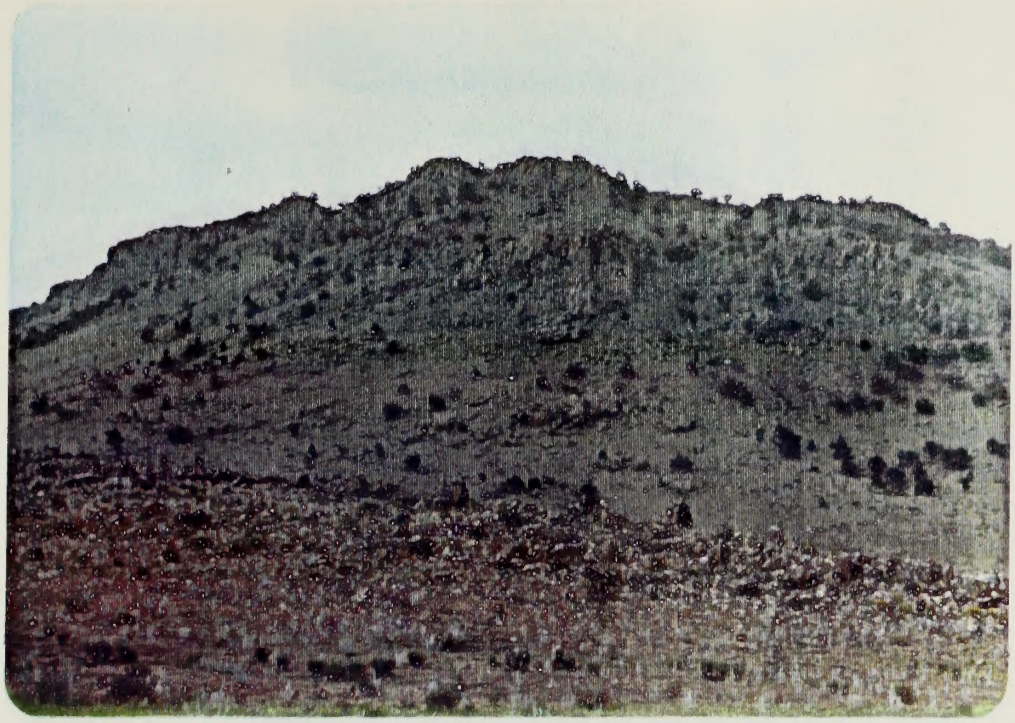


Photo 2. Rimrock Cliffs just below mesa tops.

Photo 3 Rimrock cliff on low hillside

Photo 4. Mountain meadows and grassy slopes.

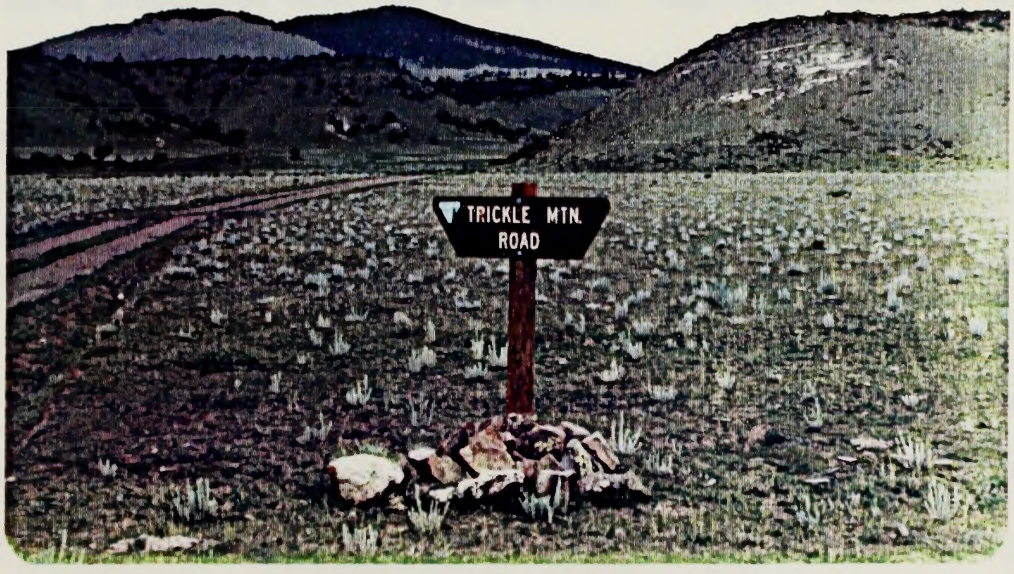


Photo 5. Typical shortgrass habitat site within the Trickle Mountain WHA.

Root development is restricted to the depth of bedrock or gravel where soils are shallow.

d. Vegetation

Figure 3 shows the vegetation types of the WHA (except those lands within the National Forest boundary) as habitat sites or types. The acreages of each type are compiled in Table 3 according to land ownership. The National Forest was excluded from this mapping because it will be done at the time the Forest Service completes its planning.

The mountain and intermountain grassland (2) is the largest habitat site in the Trickle Mountain HMP area. This habitat site contains two habitat subtypes, the shortgrass subtype (021) and the mid grass subtype (022).

The shortgrass habitat subtype is dominated by blue grama (*Bouteloua gracilis*) at lower elevations (less than 8,300 feet) and on south and west facing slopes at higher elevations. Dryland sedges (*Carex* spp.), ring muhly (*Muhlenbergia torreyi*) and red three-awn (*Aristida longiseta*) are often associated with the blue grama. Important forbs in this type were Russian thistle (*Salsola kali*), annual goosefoot (*Chenopodium* spp.), and scarlet globemallow (*Sphaeralcea coccinea*). (See photo 5.) Data from line transects show a vegetation composition consisting of 75 percent blue grama, 3 percent ring muhly, 15 percent Russian thistle and goosefoot, and 7 percent other species. Vegetative ground cover averages 23 percent.

At higher elevations (8,300-9,000 feet) the shortgrass habitat site is dominated by slimstem muhly (*Muhlenbergia filiculmis*) and dryland sedges. Blue grama and squirreltail bottlebrush (*Sitanion hystrix*) are frequently present in this vegetation type. Pussytoes (*Antennaria* spp.), fringed

Figure 3.

TRICKLE MOUNTAIN HMP - HABITAT TYPES

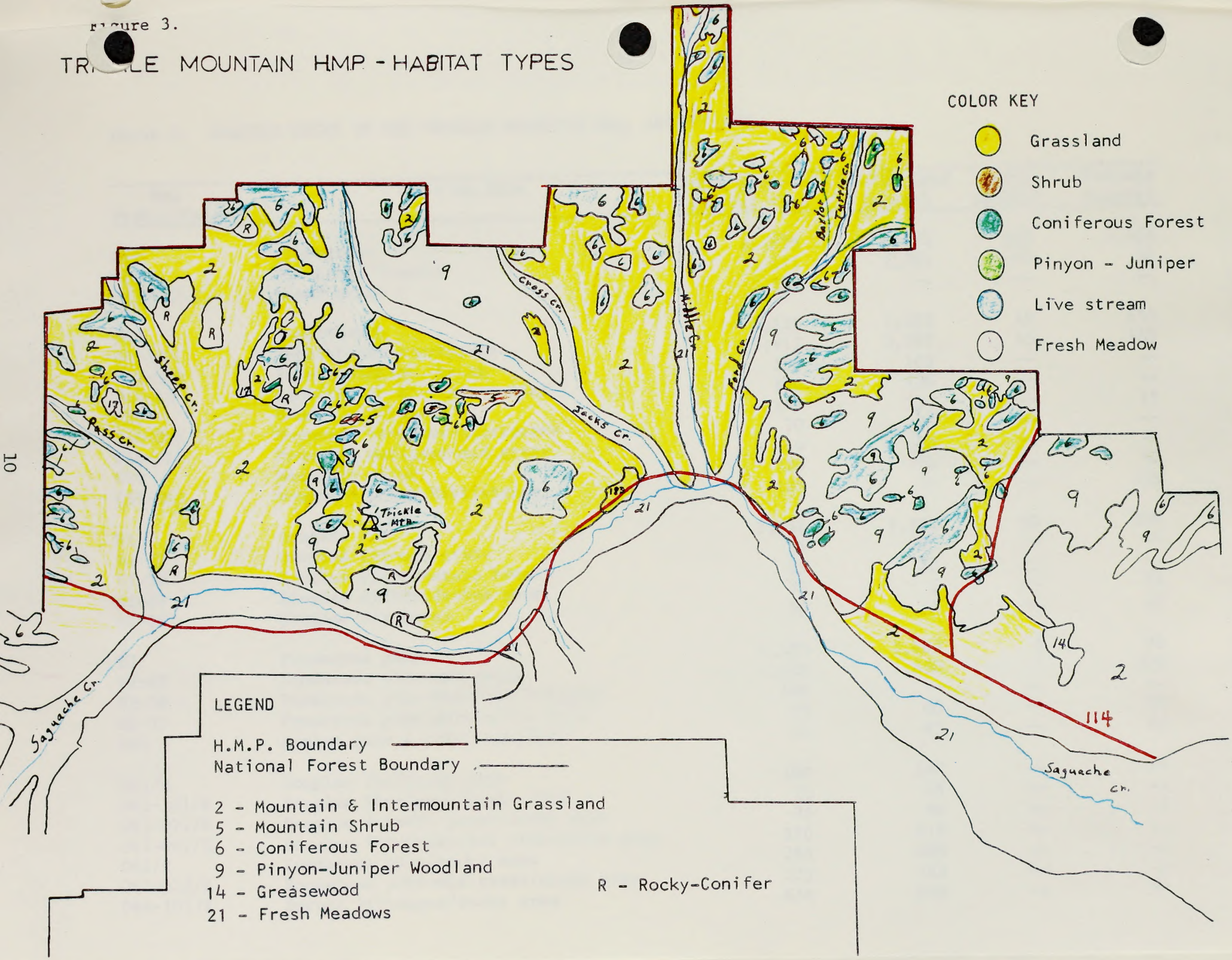


Table 3. HABITAT SITES IN THE TRICKLE MOUNTAIN WHA, AUGUST 1976

Map Symbol/Color	Habitat Site	Total Acres of Habitat Site	Public Land (acres)	State (acres)	Private (acres)
021	Shortgrass	12,679	10,994	160	1,525
022	Mid-grass (bunch)	2,811	2,781	---	30
021-022	Mixed grass	160	--	---	--
045	Rabbitbrush	2,120	1,423	40	657
045-021	Rabbitbrush-shortgrass	3,917	3,292	65	560
045-059	Rabbitbrush-Mt. brush	105	105	--	--
045-23	Rabbitbrush-Alteration Area	130	130	--	--
056	Mountain Mahogany	147	132	--	15
056-021	Mountain Mahogany-shortgrass	70	70	--	--
056-022	Mountain Mahogany-mid grass	40	40	--	--
059	Mountain shrub	220	170	--	50
059-045	Mountain shrub-Rabbitbrush	185	50	--	135
61	Douglas fir	2,652	2,362	90	200
61-22	Douglas fir-mid grass	35	35	--	--
61-59	Douglas fir-Mountain brush	25	25	--	--
61-62	Douglas fir-Ponderosa pine	55	5	--	50
61-101	Douglas fir-Aspen	50	5	--	45
62	Ponderosa pine	1,523	1,483	5	35
62-22	Ponderosa pine-mid grass	2,205	1,830	5	370
62-56	Ponderosa pine-Mountain Mahogany	100	--	--	--
62-23	Ponderosa pine-Alteration Area	85	60	--	25
065	Limber pine & other conifers	90	65	--	25
061/R	Douglas fir/rocky area	180	180	--	--
061-101/R	Douglas fir-Aspen/rocky area	75	75	--	--
061-022/R	Douglas fir-mid grass/rocky area	95	90	--	5
061-062/R	Douglas fir-Ponderosa pine/rocky area	210	210	--	--
062/R	Ponderosa pine/rocky area	285	285	--	--
062-022/R	Ponderosa pine-mid grass/rocky area	225	225	--	--
064-101/R	Spruce fir-Aspen/rocky area	656	656	--	--

Table 3 cont.

Map Symbol/Color	Habitat Site	Total Acres of Habitat Site	Public Land (acres)	State (acres)	Private (acres)
9	Pinyon-Juniper Woodland	7,218	7,058	--	160
9-056	Pinyon-Juniper,-Mountain Mahogany	25	25	--	--
9-022	Pinyon-Juniper,-mid grass	70	70	--	--
9-021	Pinyon-Juniper,-shortgrass	2,390	1,850	70	470
101	Aspen	315	205	--	110
134-045	Four-wing saltbush,-Rabbitbrush	365	365	--	--
151-021	Wintervat-shortgrass	715	555	--	160
17	Pingue	60	60	--	--
17-021	Pingue-shortgrass	13,039	11,561	205	1,273
17-022	Pingue-mid grass	1,615	1,149	--	466
202	Bottomland Shrub	605	125	--	480
212	Fresh Meadows	2,750	530	--	2,220
23	Habitat Alteration Areas	385	385	--	20
23-021	Habitat Alteration Area-shortgrass	180	180	--	--
	TOTALS	60,862	51,136	640	9,086

sagewort (Artemisia frigida), and cinquefoil (Potentilla spp.) are important forbs in the high elevation shortgrass habitat subtype. Pingue (Hymenoxys richardsoni), snowberry (Symphocoricarpos palmeri), and rabbitbrush (Chrysathamnus spp.) were the most common shrubs. Data from line transects indicates a vegetation composition consisting of 31 percent slimstem muhly, 22 percent dryland sedges, 16 percent pingue, 9 percent blue grama, 5 percent pussytoes, 5 percent fringed sage, and 12 percent miscellaneous grass, forbs, and shrub species. Vegetative groundcover averages 26 percent.

The midgrass habitat site (022) generally occurs at elevations above 9,000 feet and on north and east facing slopes at lower elevations. The midgrass vegetation type is dominated by Arizona fescue (Festuca arizonica), mountain muhly (Muhlenbergia montana), and western wheatgrass (Agropyron smithii). Dryland sedges, needle-and-thread (Stipa comata), prairie junegrass (Koeleria cristata), fringed sage, pingue, rabbitbrush and snowberry are important species associated with the midgrass vegetation type. Vegetative groundcover in this type varies between 30-40 percent (see photo 6).

Vegetation along gullies and drainage areas is often dominated by rabbitbrush (045). The understory in the rabbitbtush habitat type is generally shortgrass (021). Rubber rabbitbrush (Chrysothamnus nauseosus) is the most abundant species of rabbitbrush; however, green rabbitbrush (C. greenei) dominates on some sites. Four-winged saltbush (Atriplex canescens) and pingue are often associated with the rabbitbrush habitat type.

Data from line transects in the rabbitbrush vegetation type shows a

Photo 6. Typical midgrass habitat site.

Photo 7. Coniferous forest habitat site.

vegetation composition of 15-35 percent rubber rabbitbrush, and 1-5 percent other shrubs. Understory vegetation is dominated by blue grama (45-70 percent). Other grasses and forbs contribute less than 10 percent to the total vegetative composition. Vegetative groundcover averaged 39 percent in the rabbitbrush habitat type.

There are two habitat subtypes in the mountain shrub habitat site. Mountain mahogany (056, Cereocarpus montanus) dominated on some sites; however, the majority of the mountain brush vegetation was dominated by other mountain shrubs (059). Currant (Ribes spp.) and bush rockspirea (Holodiscus dumosus) were the mountain shrub species most often encountered in Trickle Mountain HMP area.

Douglas fir (061, Pseudotsuga menziesii) and ponderosa pine (062, Pinus ponderosa) were the most common subtypes in the coniferous forest habitat site. Other conifers including spruce (Picea spp.), fir (Abies spp.), limber pine (Pinus flexilis), and bristlecone pine (Pinus aristata) occurred in scattered areas and were at times locally abundant.

The understory vegetation in the coniferous forest habitat generally consisted of mountain brush, midgrasses, and/or mineral soil--duff (see photo 7).

The pinyon-juniper woodland (9) habitat site was dominated by pinyon pine (Pinus edulis) and juniper (Juniperus spp.)(see photo 8). Understory vegetation densities in this habitat type were dependent on the canopy cover of the pinyon-juniper trees. Where the trees were scattered, understory vegetation consisted primarily of shortgrass subtype (021).

Photo 8. Typical pinyon-juniper habitat.

Photo 9. Riparian aspen habitat.

The understory vegetation in pinyon-juniper woodlands on open north and east slopes consists of mountain brush (059) and midgrass (022) vegetation subtypes. In areas where the trees form a closed canopy, there is little understory vegetation. The woodland floor under dense stands of pinyon-juniper consists of mineral soil and litter duff.

The Aspen habitat subtype (101) generally occurs at higher elevations and along live streams (see photo 9.) The aspen subtype is dominated by stands of quaking aspen (Populus tremuloides). A lush understory vegetation consisting of woods rose (Rosa woodsi), nodding brome (Bromus anomalus), and bluegrass (Poa spp.) is usually present in this habitat subtype.

Fourwing saltbush (134) often occurs in conjunction with the rabbitbrush habitat site. The understory vegetation in the saltbush habitat site is usually shortgrass (021) subtype.

Winterfat (151) dominates on several upland areas within the HMP boundary. Shortgrass vegetation (021) generally forms the understory in this habitat site.

The pingue (17) habitat subtype forms one of the largest habitat sites within the HMP area. Shortgrass (021) vegetation generally forms the understory in the pingue habitat site.

Data from line transects in the pingue habitat site show a vegetation composition consisting of 23-35 percent pingue, 40-45 percent blue grama, 7-14 percent fringed sagewort, 1-8 percent ring muhly, and 1-10 percent other shrubs, grasses and forbs.

The bottomland shrub habitat subtype (202) is dominated by alder (Alnus spp.) and willow (Salix spp.). Understory vegetation consists of various fresh meadow grasses and forbs described below.

The fresh meadow habitat subtype (212) is dominated by sedges, rushes (Juncus spp.), tufted hairgrass (Deschampsia caespitosa), timothy (Phleum pratense), and bluegrass. Meadows in low, fair or poor condition are often dominated by Rocky Mountain iris (Iris missouriensis). Vegetative groundcover in the fresh meadows is 90-100 percent (see photo 10).

Habitat alteration areas (23) consist of crested wheatgrass (Agropyron cristatum) seedings, ponderosa pine reforestation projects, and contour furrowing.

Rocky woodland habitat occurs in several areas within the HMP boundary. The vegetation in these areas consists of a conifer (6) or aspen (101) overstory, and a mountain shrub (5) -- midgrass (022) understory. Large boulders are present throughout this habitat site. The boulders and rough topography within this habitat site render it unsuitable for livestock grazing; while, providing excellent escape and feeding habitat for wildlife.

1. Wildlife Status. (Refer to Chapter E. (Coordination) for descriptions of other resources and land uses.)

The Trickle Mountain WHA provides habitat for an estimated 234 species of vertebrate wildlife. Refer to Appendix 1 for the species list which was compiled from observations and review of available literature.

The emphasis of this HMP will be directed toward managing and improving the habitat of a select group of priority species, but the management efforts chosen will also generally improve habitat for most other wildlife.

The following groupings of typical or characteristic animals are intended to summarize the fauna of the WHA not selected as priority species.

Photo 10. Typical fresh meadow.

Riparian woodlands and wet meadows provide the preferred habitat for the largest variety of wildlife. Typical non-game mammals include raccoon, beaver, long-tailed vole and northern pocket gopher. The red-winged blackbird, yellow warbler, common flicker, black-billed magpie, cliff swallow and warbling vireo are characteristic non-game birds. Mallard, mourning dove, mountain cottontail and sometimes blue grouse are common game species of the riparian habitat site.

The horned lark and white-tailed jackrabbit are common in the mixed grassland-brushland types and the pinyon jay is typical of pinyon-juniper woodlands. Porcupines and mountain bluebirds are found throughout the coniferous woodlands (including P-J) in the WHA. Typical animals of pine-fir forests include the Colorado chipmunk, snowshoe hare, Abert's squirrel, Stellar's jay, dark-eyed junco, mountain chickadee and western tanager.

Rock wrens and bushy-tailed woodrats are common in the rocky slopes found throughout the WHA; and deer mice, coyotes, turkey vultures, common ravens and common nighthawks are found throughout the area in all habitats.

Several additional species are found within the Wildlife Habitat Area that are significant to deserve special notice in this report. Some of these species may be classified as priority species at a later date.

On occasion, bear and lion can be found within the WHA and they provide a small amount of recreation. Cottontail and mourning dove are the most commonly hunted smaller game species of the region. Coyotes and bobcats are trapped extensively within the Trickle Mountain WHA and provide more man-days recreation use than all other wildlife species.

The following are the priority species selected for management emphasis in this HMP.

a. Bighorn Sheep (*Ovis canadensis*)

Since their introduction into the Trickle Mountain area in 1951, this bighorn herd has expanded to approximately 300 animals. The high productivity and overall health of this herd has allowed the Colorado DOW to use it as a source for its bighorn transplanting program since 1974. Between 25 and 30 bighorns are taken from the area each year.

Trickle Mountain has been open to bighorn hunting since 1969. Total harvest has remained fairly constant, until 1976 (see Table 4). The entire WHA is within the Colorado DOW's bighorn Sheep Management Unit S-10 (map located in Appendix D).

Table 4. Bighorn sheep harvest from the Sheep Creek-Trickle Mountain Game Management Area.

Year	Application	Licenses	Harvest
1969	51	9	3
1970	778	15	6
1971	108	15	4
1972	103	12	4
1973	121	25	5
1974	-	-	-
1975	205	15	4
1976	228	25	13

The bighorn herd is believed to be near its optimum population of about 300 sheep, and allowing higher populations would greatly increase the probability of a die-off from the lungworm-pneumonia complex. However, the Colorado DOW has begun treating the herd to reduce lungworm concentrations and it is speculated that it may eventually be possible to further increase the population or expand their range.

Todd (1975)[1/] describes the food habits of the Trickle Mountain herd as follows: "Grasses and sedges made up the bulk of the yearly diet (46%), followed closely by shrubs (45%) and forbs (9%). Widespread variation occurs in species consumed, but fringed sage, sedges, and four genera of bunchgrasses are the major annual food items." Table 5 shows the relative species composition of bighorn diets in the WHA (Todd, 1975)[1/]. In addition, Todd (1975)[1/] concludes that foodplant selectivity is also closely related to plant succulence.

The Trickle Mountain bighorn sheep range is grazed by cattle, deer, elk, antelope and bighorns. Elk, antelope, and deer all use the area moderately. However, the areas used are not generally the same as the bighorn concentration areas, and there are no known areas of serious competition between sheep and the other large herbivorous game animals. Cattle graze portions of the bighorn range, but the sheep concentration areas are steep rocky slopes which are seldom used by cattle. Bear and Jones (1973) [2/] believe that ". . . in general, there is likely only limited competition between bighorns and other ungulates . . . " in the Trickle Mountain area.

The seasonal and crucial ranges of the Trickle Mountain bighorn herd are shown in Figure 4. They concentrate around Trickle Mountain during an average winter, primarily on the steep rocky slopes north of Saguache Creek, between Sheep Creek on the west and Jacks Creek on the east. These slopes are normally free of snow and thus provide forage and escape cover. Additional winter use area extends over much of the WHA;

1/ Todd, J. W. 1975. Foods of Rocky Mountain Bighorn Sheep in Southern Colorado. J. Wildl. Manage. 39 (1): 108-111

2/ Bear, G.D., and W.J. Jones. 1973, History and Distribution of Bighorn Sheep in Colorado. Colorado Division of Wildlife, Final Job Report, Research Project No. W-41-R-22.

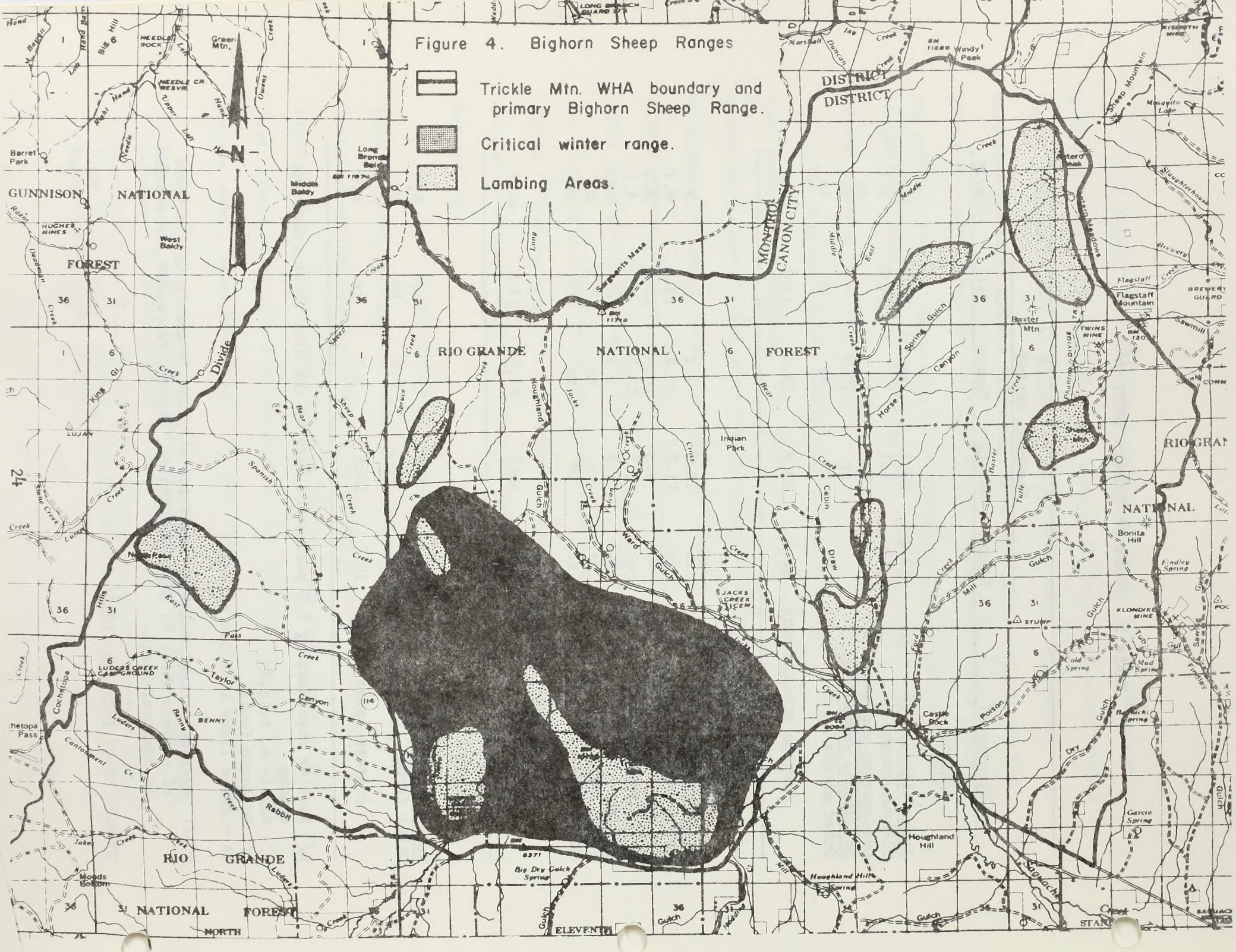
Table 5. FOODS OF BIGHORN SHEEP 1/

Species a/	Seasonal Period				
	Winter	Spring	Summer	Fall	Yearly
Shrubs					
Artemisia spp. b/	59.8	23.2	tr	26.9	34.6
Unknown shrubs c/	tr	6.1		14.0	5.1
Cercocarpus montanus		tr	12.1		tr
Holodiscus dumosus		tr	10.0		tr
Other shrubs	tr	tr	tr	tr	tr
Average total shrubs	66.5	32.9	29.4	43.9	44.9
Grasses and Sedges					
Muhlenbergia spp.	tr	18.0	7.2	tr	9.5
Carex spp.	tr	11.7	15.2	13.5	8.7
Festuca spp.	6.5	8.3	10.6	11.4	8.3
Bouteloua gracilis	tr	5.1	23.3	8.7	6.5
Poa spp.	5.5	6.8	5.5	8.0	6.3
Stipa spp.	tr	tr	tr	9.5	tr
Other grasses	tr	tr	tr	tr	tr
Average total grasses and sedges	22.8	56.9	64.9	53.9	46.1
Forbs					
Yucca Glauca	8.4	5.5		tr	5.3
Other forbs	tr	tr	5.7	tr	tr
Average total forbs	10.7	10.3	5.7	tr	9.0

a/ Species representing 5.0 percent or more of the diet in at least one season
b/ Mostly A. frigida
c/ Rosaceae family
tr = grace (less than 5.0 percent)

NOTE: Average percent relative densities of plant fragments in the feces of bighorn sheep in Saguache County. Figures represent percentages in seasonal diets.

SOURCE: Todd 1975, p. 110.1/


Trickle Mtn. WHA boundary and primary Bighorn Sheep Range.
Critical winter range.
Lambing Areas.
GUNNISON NATIONAL FOREST
RIO GRANDE NATIONAL FOREST
RIO GRANDE NATIONAL FOREST
DISTRICT
DISTRICT
MONTROSE
CANON CITY
Divide
Barret Park
West Baldy
Middle Baldy
Long Branch
Needle Rock
Green Mtn.
Windy Peak
Sheep Mountain
Flagstaff Mountain
Baxter Mtn.
Indian Park
Bonita Hill
Castle Rock
Houghland Hill
Garcia Spring
Cold Spring
Mud Spring
Findley Spring
Big Dry Gulch Spring
Moads Bottom
Luders Creek Campground
Cochetopa Pass
Cochetopa
Taylor
Canyon
Rabbit
Spanish
Ward Gulch
Houghland Gulch
Poison
Dry Gulch
Mill Gulch
Tuba Gulch
Sawmill Gulch
Spruce Creek
Sheep Creek
Bear Creek
Cross Creek
Cabin Draw
Horse Spring Gulch
Middle Creek
East Creek
Jacks Creek
Wilson Creek
Tuba Creek
Baxter Creek
Phantom Creek
Sawmill Creek
Brewery Creek
Slaughterhouse Creek
Duncan Creek
Jay Creek
Hand Creek
Owens Creek
Needle Creek
Razor Creek
Deadman Creek
King Gl. Creek
Lujan Creek
Spanish Creek
Luders Creek
Cantonment Cr.
Jake Creek
Cottonwood Creek
Ute Creek
Cimarron Creek
Gunnison River
Arkansas River
Tomichi Creek
Ohio Creek
Gunnison River
Big 6
Hughes Mines
Lujan
Benny
Twins Mine
Klondike Mine
Stump
Flagstaff
Brewery Guard
Long Branch Guard
Jacks Creek Campground
Eleventh
Stanolind
Sawmill
Sawmill Gulch
Sawmill Creek
Sawmill Mountain
Mosquito Lake
Mesa Verde
Sheep Mountain
Sheep Mtn.
Sheep Mtn.
Sheep Mtn.

to the east as far as Findley Gulch. Use in many of these areas depends upon the severity of the weather. The sheep also utilize hayfields along Sheep, Middle and Saguache Creeks for forage.

The sheep spread out into surrounding areas for the summer, but a portion of the herd remains in the Trickle Mountain area. Known lambing ranges are on rocky slopes on the south and west faces of Trickle Mountain and on the slopes of Sheep Creek, Middle Creek and Bear Creek. Other lambing ranges are on the slopes of Antero Mountain and East Pass Creek in the Rio Grande National Forest (Figure 4.) The primary migration routes to and from Trickle Mountain are east and west along Pass Creek to North Pass and southwest and northeast across the Middle Creek and Ford Creek drainages to Antero Peak and along Indian and Baxter Creeks.

Two habitat types in the WHA are believed to have special significance for the bighorn herd. The permanent streams and their associated wet meadows (see Figure 3 and Table 3) are especially important as sources of free water and green succulent forage during the dry months, since the WHA is a relatively arid, low altitude range. The rocky-conifer type (see Figure 3 and Table 3) contains trees and huge boulders which provide exceptionally good shelter and escape cover near extensive areas of forage.

The only known significant deficiencies in the bighorn's habitat are less than optimum free water sources and inadequate protection from disturbances by humans in vehicles.

b. Elk (*Cervus canadensis*)

The elk population, using the BLM portions of the WHA has increased to about 500 head in recent years. The BLM lands are mostly used by elk during the winter. Much of the BLM land within the WHA is considered

crucial elk winter range (Figure 5), with concentration areas on the northern and eastern slopes of Tr ckle Mountain, Sheep Creek, Taylor Creek and Baxter Creek. Most of the elk wintering in the WHA are believed to summer at higher elevations to the west, north and northeast; but the crucial winter range is not distinctly divided from similar ranges along Saguache Creek to the southwest and there is undoubtedly some exchange of elk.

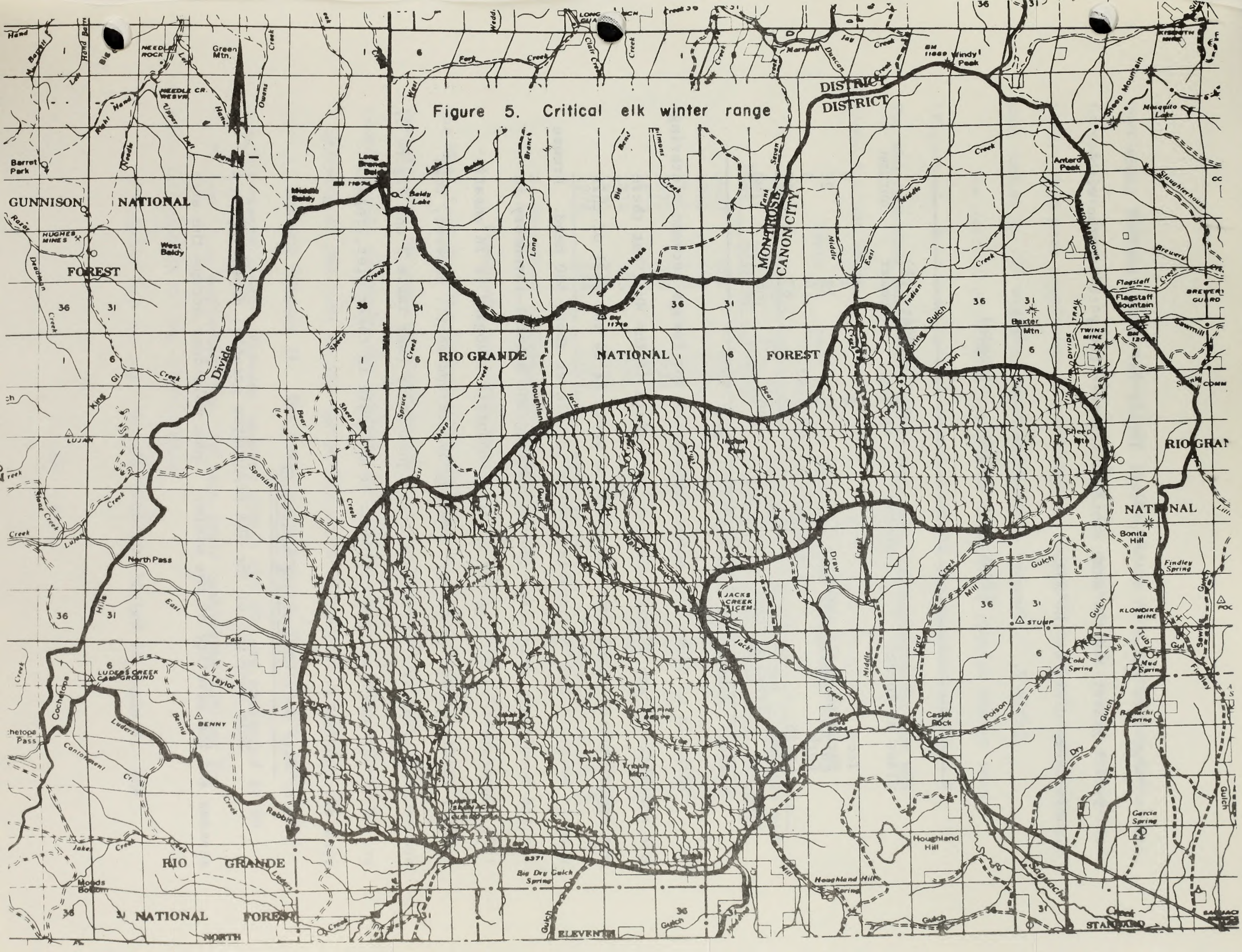
Table 6 lists elk harvest data for Game Management Unit (GMU) 68 (see Appendix D). The Trickle Mountain WHA comprises about 20% of the GMU, but harvest for the WHA is not known. The majority of the hunting and harvest in the WHA takes place on National Forest lands. GMU 681 was established in 1977 as that portion of Unit 68 north of Colorado Highway 114.

Table 6. Elk Harvest Data for Game Management Unit 68.

Year	Total Harvest	Number of Hunters	Percent Success	Harvest per Sq. Mile	Hunters per Sq. Mile
1969	317	861	37	0.30	0.82
1970	301	1293	23	0.29	1.24
1971	165	1074	15	0.19	1.20
1972	432	2083	21	0.35	1.68
1973	317	3204	10	0.26	2.58
1974	375	3799	10	0.30	3.06
1975	460	3611	13	0.37	2.91
1976	384	3228	12	0.31	2.60

Grass comprises at least two-thirds of the diet of elk during all seasons, according to a recent study by Hansen and Reid (1975)[3/] elsewhere in the San Luis Valley (Table 7). Their study also indicates that diet overlap between elk and deer is greatest (23 to 48 percent) during the summer months, when both species prefer grass. Diet similarities between elk and

3/ Hansen, R.M., and L.D. Reid. 1975. Diet overlap of deer, elk, and cattle in Southern Colorado. J. Range Manage. 28 (1):43-47


GUNNISON NATIONAL FOREST
RIO GRANDE NATIONAL FOREST
RIO GRANDE NATIONAL FOREST
MONTROSE DISTRICT
CANON CITY DISTRICT
Green Mtn.
Needle Rock
Needle Cr. Resvr.
Barret Park
Hughes Mines
West Baldy
Baldy Lake
Long Branch Ranch
Sawmill Mesa
Windy Peak
Antero Peak
Steep Mountain
Mosquito Lake
Slaughterhouse
Flagstaff Mountain
Baxter Mtn.
Twins Mine
Divide Trail
Sheep Mtn.
Bonita Hill
Findley Spring
Klondike Mine
Stump
Cold Spring
Mud Spring
Castle Rock
Jacks Creek Campground
Luders Creek Campground
Benny
North Pass
Cochetopa Pass
Rabbit
Big Dry Gulch Spring
Houghland Hill
Houghland Hill Spring
Garcia Spring
Sagauche
Standard
Eleventh
Moads Bottom
Lujan
Spanish
Taylor
Luders
Cantonment Cr.
Poison
Dry
Mill
Jacks
Indian
Flagstaff
Brewery
Sawmill
Tub
Gul
Sheep
Spruce
Houghland
Jack
Bear
Long
Middle
East
Fork
Big
Sevenmile
Marshall
Duncan
Jay
Clear Cr.
Weddington
Hand
Big
Lake
Owens
Creek
Gulch
Canyon
Divide
Hills
Pass
Trinchera Mtn.
Big Dry Gulch Spring
Sheep Mtn.
Bonita Hill
Findley Spring
Klondike Mine
Stump
Cold Spring
Mud Spring
Castle Rock
Garcia Spring
Houghland Hill

cattle range from about 30 to 50 percent during the summer months, since both prefer grass, and the same similarities are likely to be true with bighorn sheep diets in the WHA.

Table 7. Summary of Seasonal Foods of Elk
(Near Fort Garland, Colorado)

Class of Forage	Seasonal Diets (%) Winter	Spring	Summer	Autumn
Tree	5	8	1	6
Shrub and half shrub	17	20	12	22
Forb	2	1	4	5
Grass	76	71	83	67
Total percent	100	100	100	100

Source: Hansen and Reid (1975) 3/ p. .

There is no doubt some minor competition for forage between wintering elk and bighorns and between elk and deer exists in the WHA, but there are apparently no significant problems as yet. It is the goal of this plan to maintain the "Reasonable Numbers" of elk at about 500 head. Browse age and form class transects conducted during the habitat inventory in 1976, indicate that much of the existing mountain mahogany is in unsatisfactory condition due to severe browsing by elk and deer. However, this browse is only present in insignificant quantities (see Table 3 and Figure 3) and it is obvious that it could never be a staple in their diet, regardless of condition.

c. Mule Deer (*Odocoileus hemionus*)

Mule deer use of the WHA fluctuates greatly, depending on the seasons and the severity of the winter. Some mule deer occupy the area

yearlong. However, peak numbers are in the winter when additional deer are forced down from the higher elevations by the weather and lack of available food. This peak population is estimated at about 500 head and increasing that number to 750 will be a goal of the HMP.

The central portion of the WHA is considered crucial winter range (Figure 6). Mule deer harvest data for GMU 68 are compiled in Table 8. The WHA comprises only about 20% of this GMU, and harvests for the WHA alone are not known.

Table 8. Deer Harvest Data for Game Management Unit 68
(See map in Appendix D)

Year	Total Harvest	No. of Hunters	Percent Success	Harvest per Sq. Mile	Hunters per Sq. Mile
1969	662	1147	58	0.63	1.10
1970	566	1515	37	0.54	1.45
1971	337	843	40	0.38	0.95
1972	815	1933	42	0.66	1.56
1973	693	2611	27	0.56	2.11
1974	363	1574	23	0.29	1.27
1975	230	2253	10	0.18	1.82
1976	214	1147	19	0.19	0.92

d. Pronghorn (*Antilocapra americana*)

Pronghorns are found scattered over the lower elevations of the WHA, including the lower extremities of coniferous forest. It had been thought that the herd had been depleted to less than 100 animals, but a recent aerial survey by the Colorado DOW counted over 150 head. However, a majority of the herd is now apparently south of Saguache Creek and outside of the WHA (Figure 7). The lower elevations of the WHA are considered crucial winter range. Present numbers within the WHA are estimated at 50 to 75, and it is projected that the area could contribute habitat for about 150 animals to the overall herd.

Pronghorn harvest data for GMU A-73 are listed in Table 9. The

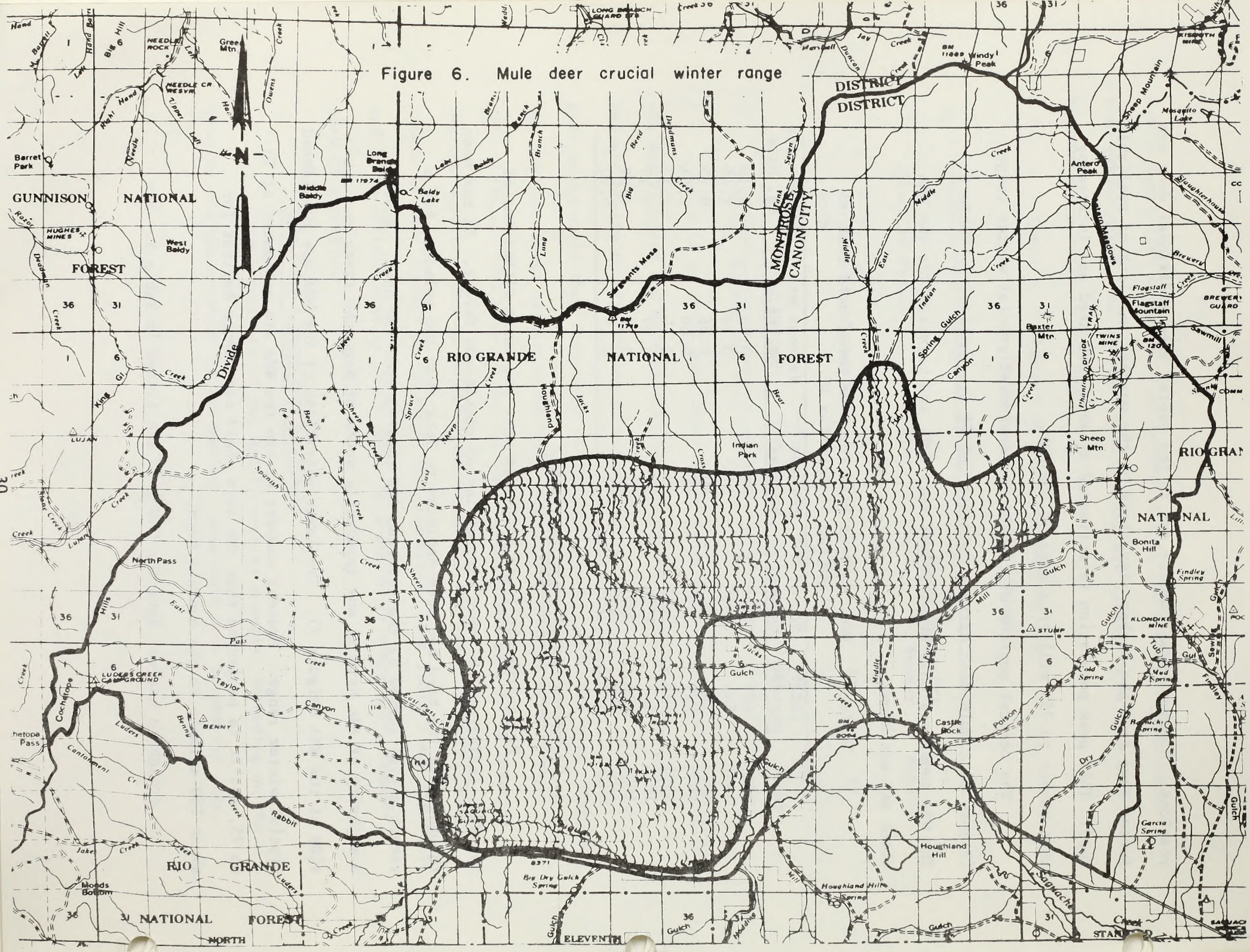
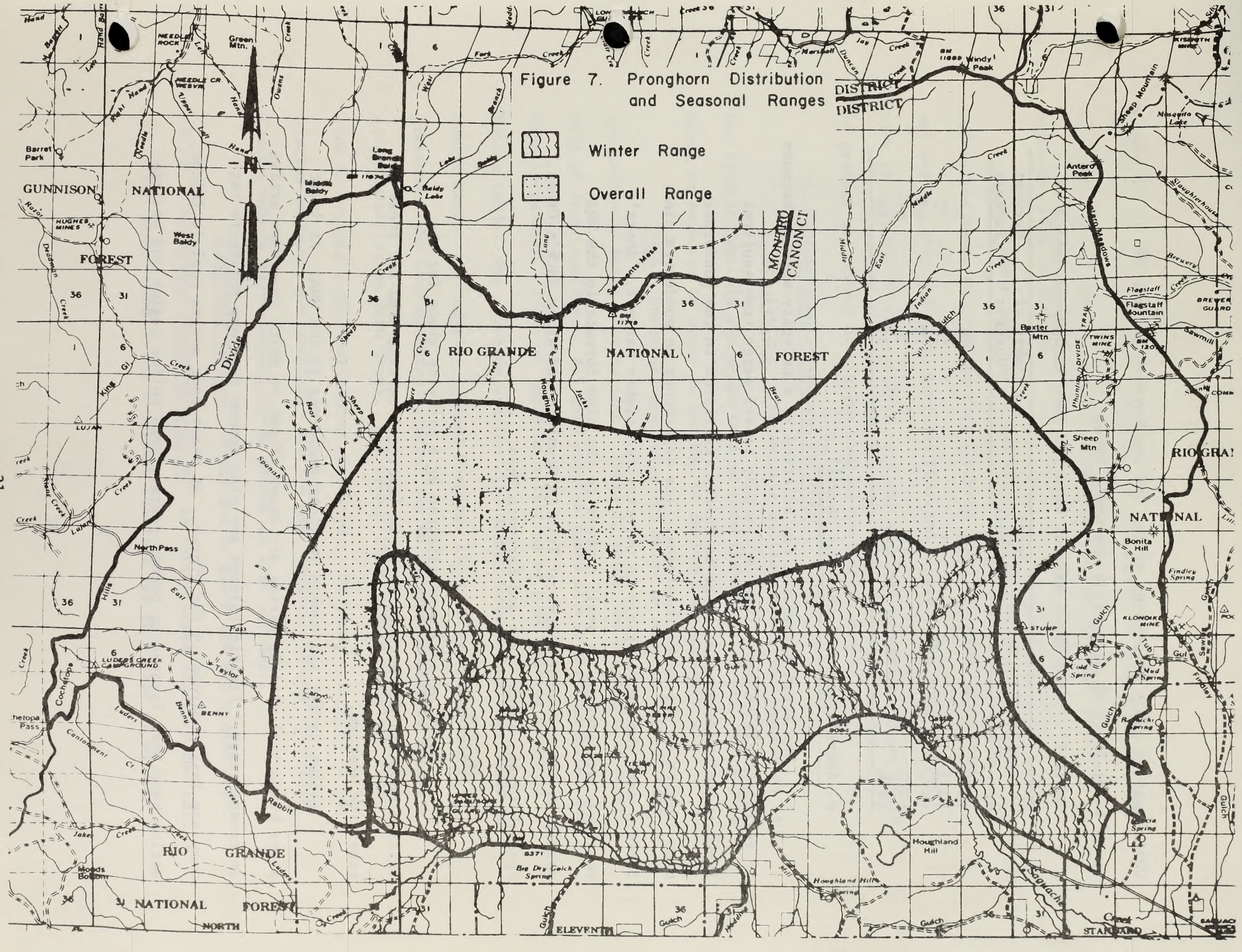


Figure 6. Mule deer crucial winter range


Winter Range
Overall Range
GUNNISON NATIONAL FOREST
RIO GRANDE NATIONAL FOREST
RIO GRANDE NATIONAL FOREST
Green Mtn.
Barret Park
West Baldy
Baldy Lake
Long Branch Ridge
Cerrents Mesa
MONTRO CANON CT
Windy Peak
Sheep Mountain
Mosquito Lake
Antero Peak
Flagstaff Mountain
Baxter Mtn
Sheep Mtn.
Bonita Hill
Findley Spring
KLONDIKE MINE
North Pass
LUDERS CREEK CAMPGROUND
BENNY
Rabbit
Big Dry Gulch Spring
Houghland Hill
Moods Bottom
ELEVENTH
STANDARD
Divide
Cochetopa Pass
Luders
Taylor
Spanish
Sheep
Indian
Middle
Flagstaff
Sawmill
Slaughterhouse
Brewery
Lake
Bear
Jacks
Houghlin
Cantonment
Jake
Creek
Gulch
Hills
East
Pass
Mill
Kapuache
Tub
Mud Spring
Cold Spring
Rancho Spring
Gracia Spring
Hand
Barrett
Needle Rock
Needle Cr. Resvr.
Upper
Left
Right
Owens
Deadman
Razor
Hughes Mines
Twins Mine
Phantom Divide Trail
Meadows
Brewery
Gulch
Fork
Marshall
Dunton
Jay
Lung
Long
Bear
Sheep
Spanish
Luders
Taylor
Benny
Cantonment
Rabbit
Jake
Moods
Bottom
Houghland
Hill
Kapuache
Standard
Eleventh
Sawmill
Flagstaff
Brewery
Slaughterhouse
Sheep
Mosquito
Windy
Antero
Indian
Middle
East
Meadows
Phantom
Divide
Trail
Twins
Mine
Bonita
Hill
Findley
Spring
Klondike
Mine
Stump
Tub
Mud
Spring
Cold
Spring
Rancho
Spring
Gracia
Spring
Houghland
Hill
Big
Dry
Gulch
Spring
Luders
Creek
Campground
Benny
Rabbit
Cochetopa
Pass
Moods
Bottom
Eleventh
Standard
Gulch
Creek

WHA comprises about 50 percent of the GMU and harvest for the WHA is estimated to be about 80 to 90 percent of the GMU's total.

Table 9. Pronghorn Harvest Data for Game Management Unit A 73

Year	Total Harvest	Number of Hunters	Percent Success
1972	13	20	65
1973	13	18	72
1974	12	18	67
1975	14	30	47
1976	27	39	69

e. Abert's Squirrel (*Sciurus aberti*)

The Abert's squirrel was selected as a priority species because it is relatively unique. This is the only tassel eared tree squirrel found in Colorado and its range is fairly restricted to the ponderosa pine forests of the Rocky Mountains. Its dependency on ponderosa pine forests make them susceptible to unrestricted timber harvest. Abert's squirrels are present in small numbers in the pine forests in the WHA, mostly on the northern slopes of Trickle Mountain and along Jack's Creek, Spanish Creek, Sheep Creek and Sargents Mesa.

f. Raptors

Birds of prey were selected as a priority group for the Trickle Mountain WHA because it is an important nesting area for these sensitive species.

Golden eagles are common yearlong residents in the WHA. At least eight historical nesting aeries are known, three of which have been active in recent years. Prairie falcons are also common yearlong residents but they are less numerous in the winter. At least four active prairie falcon aeries have been located in recent years. Both golden eagles and prairie

falcons nest in the rimrock cliffs which are scattered throughout the WHA (see Photo 11). The locations of active aeries are recorded in BLM's wildlife files in Alamosa.

Other raptors nesting in the WHA in small numbers include the red-tailed hawk, American kestrel (sparrow hawk), goshawk, great horned owl and possibly the marsh hawk and Swainson's hawk. The rough-legged hawk is a common winter resident, and the American peregrine falcon could be present as a nomad or migrant, but no nesting is known.

g. Aquatic Populations and Habitats

1. Populations. The aquatic habitat within the boundaries of the Trickle Mountain WHA supports some good fisheries. A list of species known or expected to occur in the WHA is included in Appendix A.

Fish. There are presently 70½ miles of aquatic habitat that are currently being used by fish. Table 10 shows the breakdown of ownership of these habitats. All game species found within the boundaries have been introduced. Table 11 contains a listing of game species found on Public Lands. One non-game species (Rio Grande Sucker) has been found on Public Lands. All aquatic habitat receives light to moderate fishing pressure. The last stocking to occur was in the mid sixties of Yellowstone cutthroat on Ford Creek. All creeks found within the study area seem to contain a self-sustaining population. No harvest figures or population estimates are available for the WHA. Aquatic habitat on Public Lands produces approximately 60-80 pounds of fish per acre.

Threatened Species. Plans are to place the Rio Grande cutthroat trout (*Salmo clarki virginalis*) in Tuttle Creek early in the fall of 1977. This stream is an excellent location for this type of action.

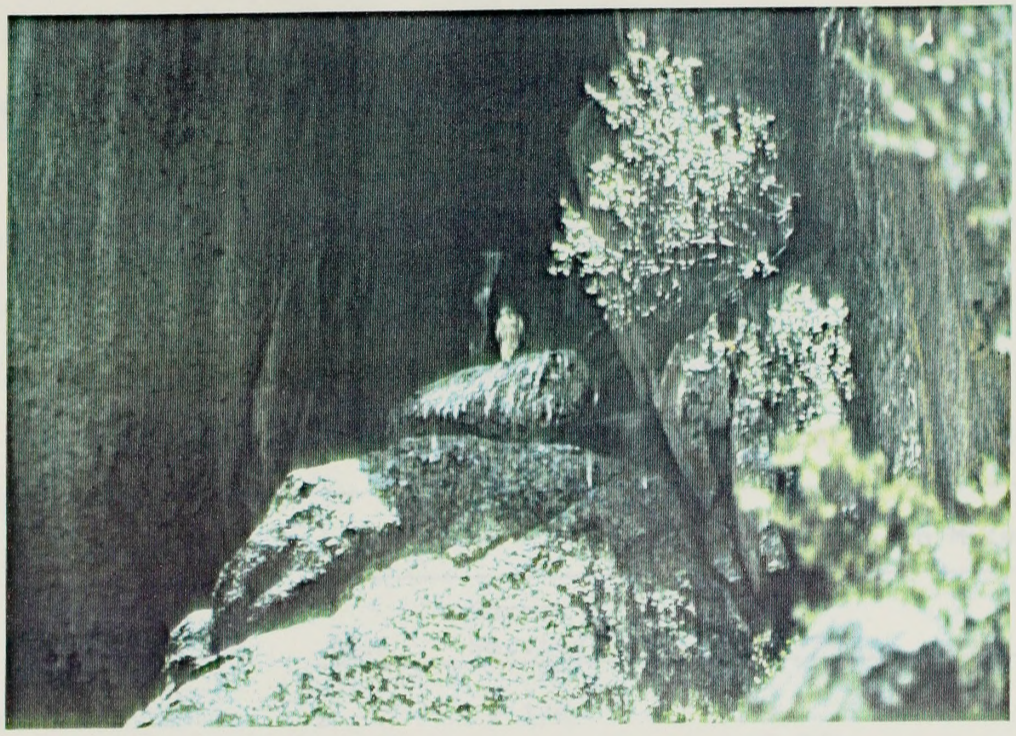


Photo 11. Prairie falcon nest site.

A barrier was placed on the creek in 1977 to prevent upstream migrations of fish from Ford Creek. The derris operation was completed in August 1977 to remove the existing fishery from Tuttle Creek so no competition will occur when the cutthroat are introduced. This derris operation included the use of a fish toxin, Rotenone, with a detoxification station at the confluence of Tuttle and Ford Creeks. The introduced fish should provide a potential source for future stockings into other streams.

Table 10. Trickle Mountain WHA Aquatic Habitat by Surface Ownership

Name of Stream*	Distance in Miles			
	BLM	Forest Service	Private	Total
Tuttle Creek	2	2 1/2	0	4 1/2
Saguache Creek	1/4	0	6 3/4	7
Ford Creek	3	2 1/2	2 1/4	8
Sheep Creek***	2	9 1/4	3 3/4	15
Middle Creek***	0	10	6 1/4	16 1/4
Phantom Creek	0	1 3/4	1/4	2
Spanish Creek	1/4	4 1/4	3/4	5 1/4
Indian Creek	0	5	3/4	5 3/4
Cross Creek	0	2	1 1/2	3 1/2
Spruce Creek	0	3 1/4	0	3 1/4
	7 1/2	40 1/2	22 1/2	70 1/2**

* See land status Fig. # for location of streams

** Total aquatic habitat for HMP
miles - 70 1/2
approximately 35.7 surface acres

BLM - total miles - 7 1/2
approximately 4.9 surface acres

*** Sheep Creek also includes E. Sheep Creek
Middle Creek also includes E. Middle Creek.

Table 11. Aquatic Species Present on Public Lands within The Trickle Mountain WHA

Name of Stream	Species Found **
Tuttle Creek *	Brook Trout
Saguache	Brook, Brown Trout Rio Grande Sucker, Rainbows and Rainbow-Cutthroat crosses.
Ford Creek	Brook Trout, Yellowstone Cutthroat Trout
Sheep Creek	Brook, Trown Trout, Rio Grande Sucker
Spanish Creek	Brook Trout

* Tuttle Creek's brook trout population has been removed and will be replaced with Rio Grande Cutthroat trout.

** Species found on Public Land generally represent species found on private and Forest Service Lands.

2. Habitat Conditions. Most of the aquatic habitat on Public Lands seems to be in good shape (see Table 12). The only exception is the middle and lower portions of Ford Creek. Three enclosures have been placed on Ford Creek to study the effects that livestock grazing has on the riparian vegetation (see Figure 8, photos 12 thru 17.) Photos 18 to 22 show the habitat that is found on Public Lands. The only other creek that has had a recent habitat change is Sheep Creek. It has been a beneficial change to this point but the sediment load that is being carried in the stream is now beginning to cover usable spawning beds. This sediment appears to be coming from the surrounding hillsides that have been overgrazed. Previously, this sediment was building a good base that allowed the good "come back" of riparian vegetation that had been overgrazed by livestock.

Table 12. Aquatic Habitat Condition for the Stream Within the Trickle Mountain WHA

Name of Stream	Aquatic Community	Riparian Community	Riparian* Stability	Pool** Quality	Bottom*** Comp. %	Riffle** Quality
Ford Creek						
Lower	Poor	Poor	Stable	4	75-25-25	2
Middle	Fair	Fair	-Changing	3	60-20-20	3
Upper	Good	Good	-changing	2	60-20-20	3
Tuttle Creek	Good	Excellent	Stable	2-3	50-50-	3
Sheep Creek						
Lower	Excellent	Good	+Changing	2	40-40-20	2
Upper	Excellent	Excellent	Stable	2	50-45- 5	2
Saguache Creek	Excellent	Excellent	Stable	2	40-40-20	2
Spanish Creek	Excellent	Excellent	Stable	3	60-20-20	3

* Direction of change shown by (+ = improving), (- = declining)

Average stream width, flow, gradient
- Ford Creek - 3 ft., 3 cfs, 1-2%
- Tuttle Creek - 3½ ft., 1-2 cfs, 1-2%
- Sheep Creek - 8 ft., 5-6 cfs, 1%
- Saguache Creek - 16 ft., 12 cfs, 1%
- Spanish Creek - 3 ft., 2 cfs, 2%

Water qualities of all five creeks fall well within the parameters of qualities that are needed for excellent cold water fishery.

** 1 = excellent, 2 = good, 3= fair, 4 = poor

*** Rubble, sand, silt (in percent)

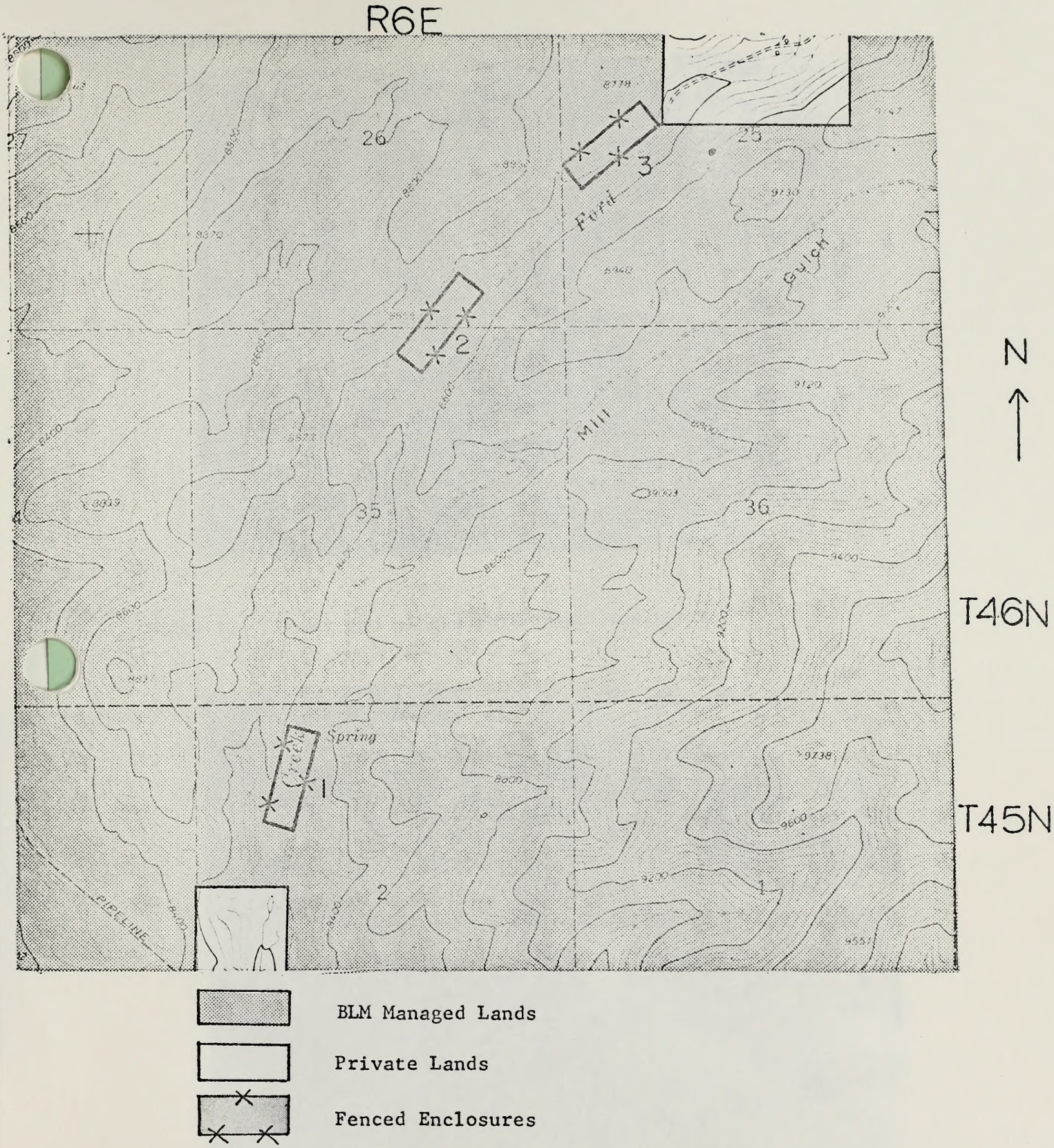


Figure 8. Location of enclosures that have been placed on Ford Creek. Also, Sections 35 and 2 are the portions that need improvements. 35 - middle, 2 - lower.

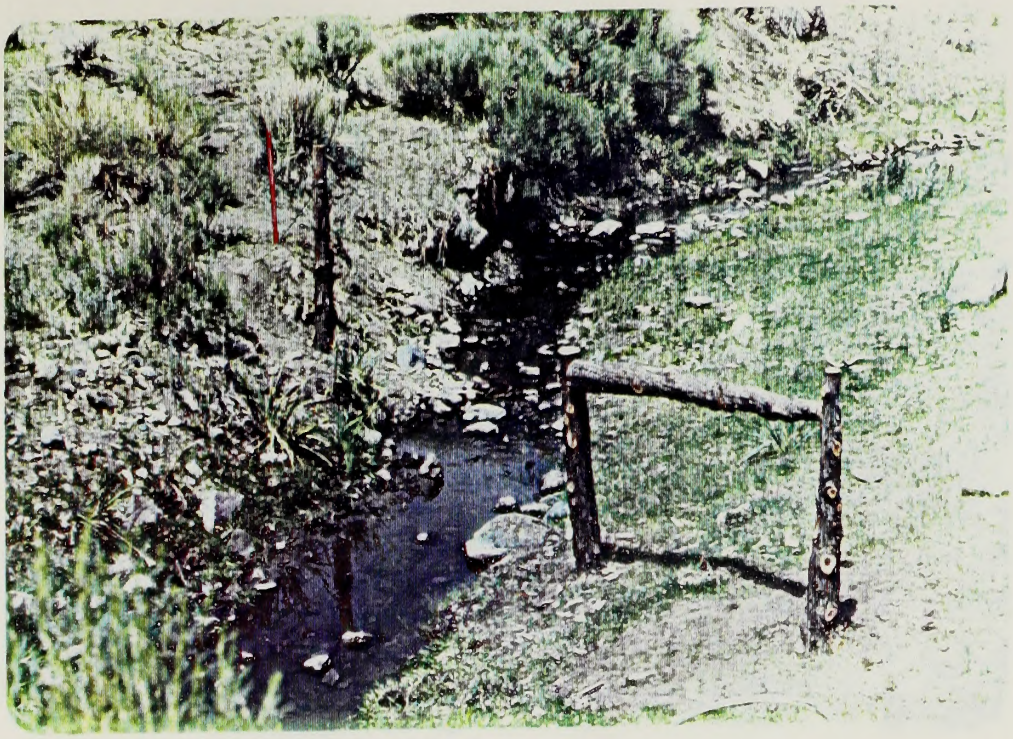


Photo 12 Lower end of the Ford Creek enclosure #1

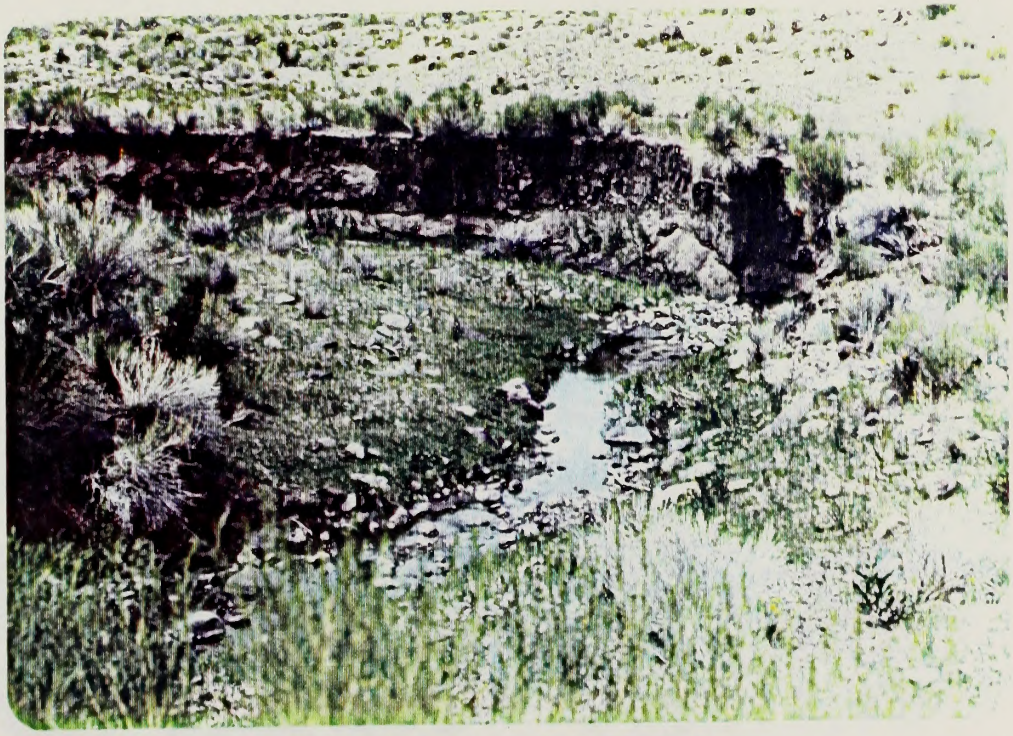


Photo 13. The middle portion of the Ford Creek Enclosure #1

Photo 14. Lower end of Ford Creek Enclosure #2

Photo 15. Upper end of Ford Creek Enclosure #2

Photo 16 Lower end of Ford Creek Enclosure #3

Photo 17 Lower end of Ford Creek Enclosure #3

Photo 18. Aquatic and riparian habitat on Sheep Creek

Photo 19. Old beaver activity on Sheep Creek

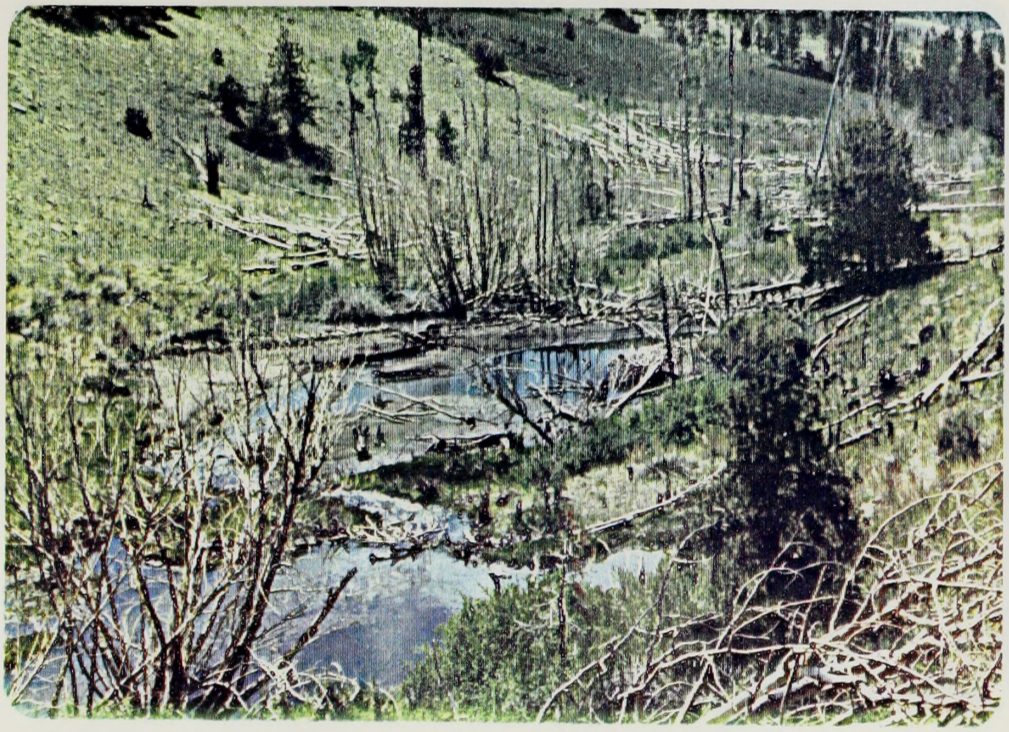


Photo 20. Typical beaver ponds on Tuttle Creek

Photo 21 Riparian habitat found on Tuttle Creek

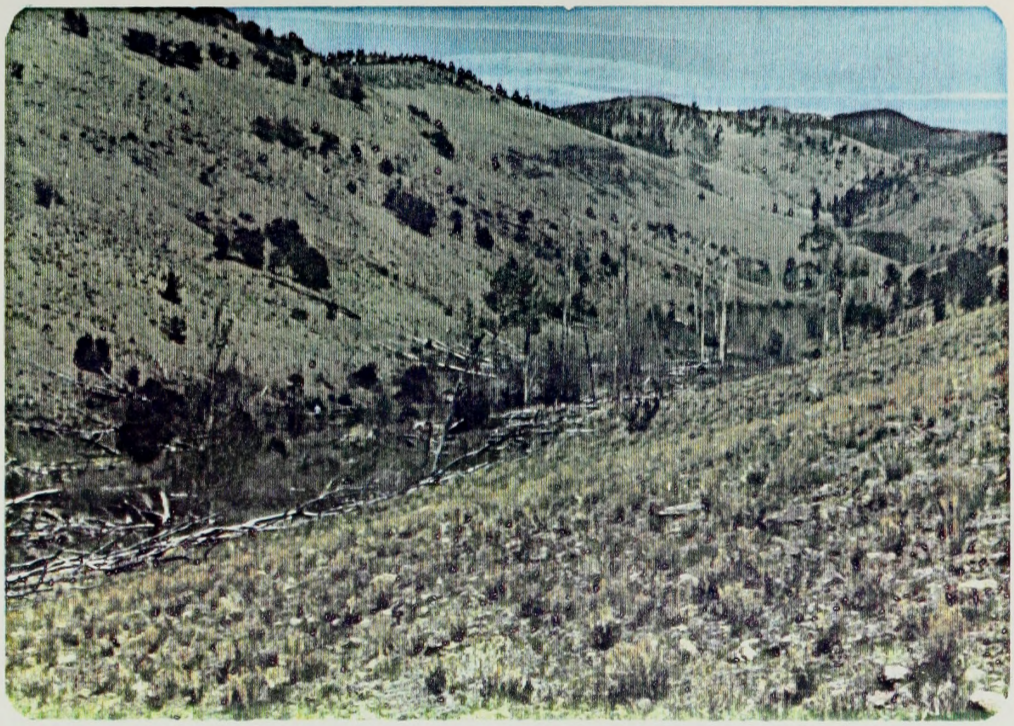


Photo 22 Beaver damage to riparian habitat on Tuttle Creek

MANAGEMENT OBJECTIVES

B. MANAGEMENT OBJECTIVES

The management objectives of this Habitat Management Plan (HMP) are directed towards improving various habitat components for the designated priority species, indicated in the Introduction. Accomplishing these objectives will also result in beneficial habitat improvement for a variety of nongame and small game species.

In general, the habitat for the priority species within the WHA is in good condition. However, some improvement is needed to insure that the populations are maintained or are able to reach "Reasonable Numbers." The habitat objective which will benefit several species is indicated below under general and those specific to a priority species are identified as such.

1. General

G-1. Improve 60,000 acres of Public Lands within the WHA to enhance the area for wildlife and support:

2,500	big game hunter days per year
5,000	small game and varmint hunter and trapping days per year
750	fisherman days per year
6,000	non-consumptive visitor days per year
10,250	total recreation visitor days per year

2. Bighorn Sheep

BS-1. Improve habitat conditions within the WHA to support the bighorn sheep population which utilizes the crucial winter range (Figure 4) around Trickle Mountain from 300 to 350 head (or to 500 head if it becomes possible later without precipitating a lung worm related dieoff).

BS-2. Protect 1,800 acres of crucial bighorn sheep winter range and provide additional winter forage.

3. Elk.

E-1. Improve or maintain habitat conditions on 60,000 acres of winter elk range within the WHA to allow for an increase in the elk population from the present 300-350 to 350-400 in five years.

4. Mule Deer.

MD-1 Improve habitat conditions on 20,000 acres of crucial mule deer winter range and 60,000 acres of year-long range to allow for an increase in the deer population from the present maximum of 500 to a maximum of 750 in five years.

5. Pronghorn.

P-1. Improve or maintain about 40,000 acres of yearlong pronghorn range to allow for an increase in the WHA pronghorn population from the present 100 - 125 to 150 in five years.

6. Abert's Squirrel.

AS-1. Maintain approximately 3,900 acres of ponderosa pine in adequate condition to maintain the present population of Abert's squirrels in the WHA

7. Raptors.

R-1. Maintain and protect 15 raptor cliff nesting sites and a minimum of 5 linear miles of rimrock cliffs as suitable nesting habitat.

8. Fish.

F-1. Establish a minimum population of 250 adult Rio Grande cutthroat trout in 2 miles of Tuttle Creek.

CONSTRAINTS

F-2. Improve 2 miles of Tuttle Creek's riparian habitat, pool riffle ratio and water quality to insure the continued minimum population of 250 adult Rio Grande cutthroat trout.

F-3. Improve 3 miles of aquatic/riparian habitat in Ford Creek to allow maintenance of a productive fishery and increase numbers and species diversity of terrestrial wildlife.

F-4. Decrease the sediment load being carried to the lower reaches of Sheep Creek to between 0.1 to 0.2 acre feet per square mile per year.

No management objectives have been set for Spanish Creek and Saguache Creek. Both creeks are present on Public Lands for a distance of only a quarter mile. Both creeks aquatic and riparian communities are in excellent condition.

C. CONSTRAINTS

The Saguache Planning Unit's Management Framework Plan (MFP) was completed in 1972. The following is a summary of MFP Step II multiple-use recommendations which were accepted as management decisions and therefore serve as constraints to HMP implementation.

1. Initiate action to withdraw the area from entry under the general agricultural and mining laws. (This action is not considered necessary now because of the surface protection and rehabilitation required under the Federal Land Policy and Management Act of 1976 (90 STAT. 2743)).

2. Designate the area as the Trickle Mountain WHA, and complete a Habitat Management Plan as the highest priority in the planning unit.

3. Develop a comprehensive transportation plan in the planning unit to protect those values (including wildlife), outlined in detail in the MFP, from off-road travel.

4. Develop and implement Allotment Management Plans on those allotments within the WHA with objectives consistent with wildlife management goals.

5. Allow intensive timber management in those stands that are capable of sustained yield production and restrict travel to main roads in plantation areas.

Constraints required in the American Antiquities Act and the Endangered Species Act are also pertinent to this plan.

D. PLANNED ACTIONS.

Specific objectives that the planned actions are related to will be shown in brackets following the statement of the planned action.

1. Species Management.

The Colorado Division of Wildlife (DOW) is responsible for species management in the Trickle Mountain WHA, including the laws and regulations necessary to accomplish it. BLM will recommend that the big game herds be allowed to reach the following approximate numbers as "Reasonable" winter populations in the WHA and then be maintained at that level. However, this HMP is a dynamic document and as such these goals may be altered, higher or lower, at a later date as the situation dictates.

Species	Present Population	Proposed
Bighorn sheep	300	350
Elk	350	350-400
Mule Deer	500	750
Pronghorn	100	150

The DOW will also be responsible for establishing regulations to protect the population of Rio Grande cutthroat trout that is to be established in Tuttle Creek.

2. Habitat Management.

a. Direct Actions. Planned actions will not be listed separately for the large herbivorous game animals because they are intended for all four species rather than individual species.

1. Big Game.

The BLM has initiated action to contract with Colorado State University to conduct applied research on the competitive relationships

of large herbivores (bighorn sheep, elk, mule deer, pronghorn and livestock) within the crucial winter range of the Trickle Mountain WHA (see Appendix E). The results of this research will be: a) a model of present diet overlap and forage utilization patterns and an estimate of forage competition; b) alternative formulae for allocating the available forage among the large herbivores to achieve optimum range condition and utilization. Recommendations on management practices such as seeding or fertilization designed to increase the available forage will also be made.

The results of this research will allow BLM to make enlightened decisions about proper range management in the WHA and update the HMP in the future. Refer to the Coordination Chapter for details of the AMP's which have been proposed as part of the Proposed Action in the San Luis Grazing Environmental Statement. These AMP's are subject to change as a result of the research findings. The following planned actions should be compatible with any forage allocation plan that is ultimately used.

a. Develope new and/or maintain existing water sources at 18 locations within the WHA to encourage better distribution of livestock and wildlife grazing (G-1, BS-1, E-1, MD-1, P-1). These will include:

1. large catchments
1 well
8 small catchments for wildlife only
2 new reservoirs with bentonite
5 existing reservoirs sealed with bentonite
1 guzzler maintenance

b. Construct 1.5 miles of fence and exclude livestock grazing

on the southern slopes of Trickle Mountain (BS-2).

c. Construct exclosures around 18 developed springs (6 new and 12 maintained) to increase the availability of succulent wet meadow forage and riparian habitat for big game and other wildlife (G-1, BS-1, E-1, MD-1, P-1).

2. Fish.

a. Derris Tuttle Creek and construct an instream barrier to eliminate competition with the released Rio Grande cutthroat in Tuttle Creek (F-1).

b. File with the State of Colorado for instream flows on Tuttle, Ford, Saguache, Sheep and Spanish Creeks to insure a minimal stream flow to maintain a fishery at all times (F-2, F-3, F-4).

c. Increase pool/riffle ratio by use of log jams, trash collectors and rock dams in Ford and Tuttle Creeks (F-2, F-3).

d. Place three inclosures on Ford Creek to study effects of livestock grazing on the riparian vegetation and aquatic ecosystem. These inclosures have already been installed. They need to be studied over the next four years. The first two years with no alteration. The years after that, plantings of riparian vegetation to find the best method to increase the badly needed riparian vegetation for Ford Creek. After completion of the studies, implement stream improvements based on the results of these studies on the rest of the creek (MD-1, F-2, F-3).

e. Maintain the inclosures on Ford Creek so long range results can be obtained from the study (MD-1, F-2, F-3).

f. Place a barrier structure on Tuttle Creek to prevent any upstream movement of species of fish that will compete with the

Rio Grande cutthroat trout (this is a threatened species). This structure is now in place (F-1).

g. Maintain this barrier so it always retains its original intent (F-1).

h. Retain livestock grazing on Tuttle Creek as it now exists with no additional increases so that riparian vegetation will be retained as it occurs at this time (F-2).

i. Intensify livestock management within the Sheep Creek drainage so the watershed is allowed to improve and reduce the sediment runoff that is occurring now (F-4).

b. Supporting Actions.

1. Road Closures. Construct road closure barriers and erect signs to explain the road closures. Refer to the protection actions section for details of the vehicle management plan (BS-1, BS-2, E-1, MD-1, P-1).

2. Land Exchanges. Continue action to exchange for the 1/4 section of private land on the top of Trickle Mountain (NW¼ Sec. 14, T. 45 N., R. 5 E). BLM will also recommend that Colorado DOW acquire parcels of the creek bottoms within the WHA because they are crucial to the bighorn herd and susceptible to conflicting land uses, such as subdivisions, etc. (BS-2, E-1, MD-1, P-1).

b. Protection Actions.

1. Big Game.

Establish a controlled access system to reduce harassment of big game animals by vehicles. This system, as shown in Fig. 9, will include a total year-round closure of the southern slopes of Trickle

Mountain, including the area between Lone Pine Gulch and Saguache Creek; several other road closures and restriction of all other vehicular travel to roads approved in the system. Refer to Figure 9 for details of the vehicle restrictions (BS-1, BS-2, E-1, MD-1 P-1).

2. All Wildlife.

a. Coordinate all timber management within the WHA to protect the existing stands of timber for big game, Abert's squirrels and other wildlife. Refer to the coordination section for more information (G-1, BS-1, BS-2, E-1, MD-1, P-1, AS-1, R-1).

b. Require surface rehabilitation and revegetation of all mineral exploration or mining surface disturbance in the WHA when regulations permit this under the Federal Land Policy and Management Act of 1976 (90 STAT.2743). Also, disallow prospecting and mining within 1/4 mile of any active raptor nest if regulations permit this. Refer to the coordination section for more details on wildlife-mineral management (G-1, BS-1, BS-2, E-1, MD-1, P-1, R-1).

c. Cooperate with local, regional and State governments and planning agencies to protect the area's eildlife and habitat from adverse land uses (G-1, BS-1, BS-2, E-1, MD-1, P-1, AS-1, R-1, F-2, F-3, F-4).

The habitat improvement projects needed for implementation of this HMP are listed in Table 13. Table 13 also lists the estimated costs in funds and man-months the target species and the scheduled year of completion. Project locations are shown in Figure 10, and detailed project plans are contained in Job Documentation Reports in BLM files.

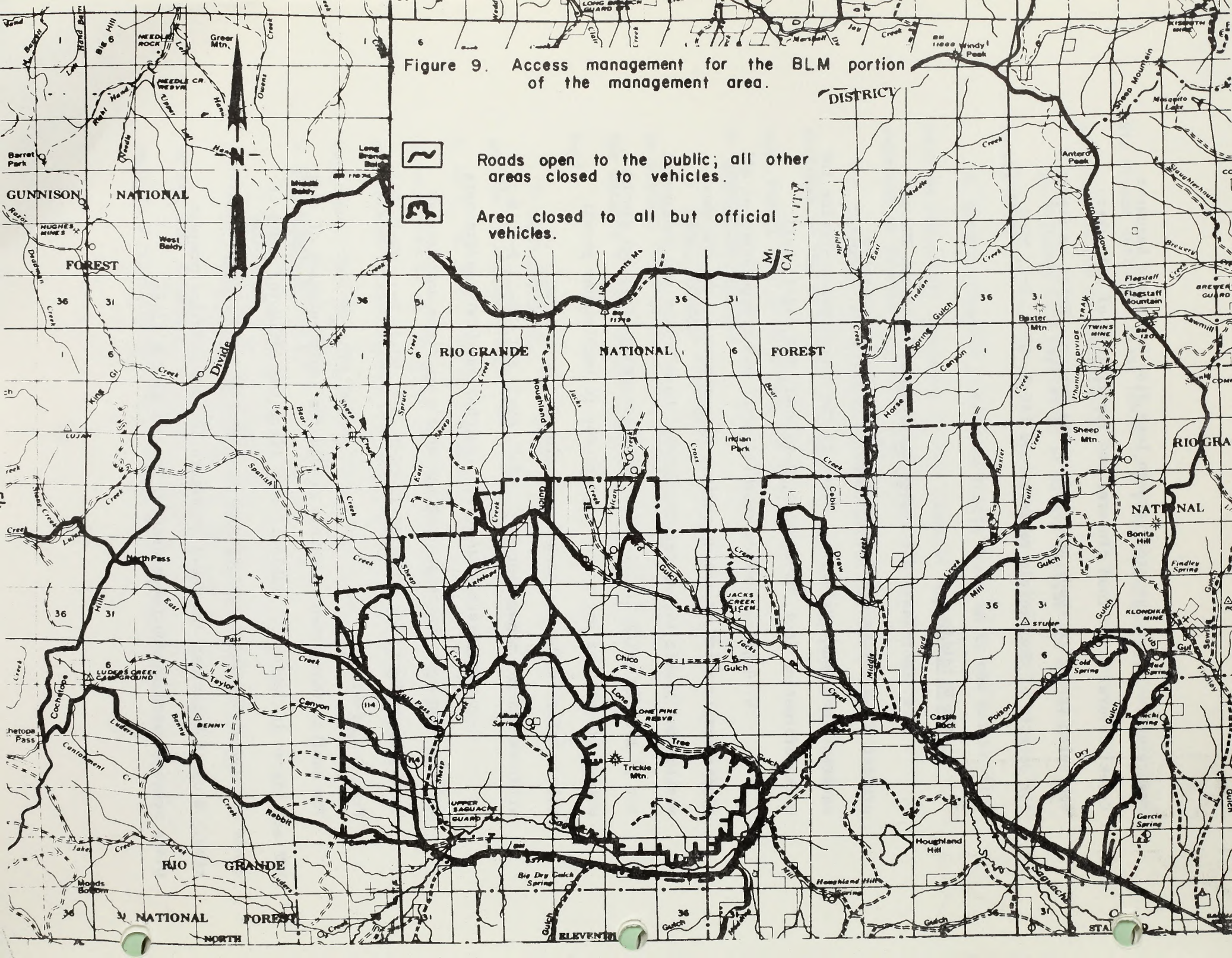


Figure 9. Access management for the BLM portion of the management area.

Table 13. Habitat Improvement Projects, Trickle Mountain WHA

Project	Man-Months					
Priority/Name	Purpose	Need	Cost*	Units	Target Species	Out Year
1. Trickle Mtn. Catchment	Project Layout and survey, contract supervision	3	$18,000	1	Big game	1
2. Lone Pine Well	" "	3	10,000	1	Big game	1
3. Ford Crk Fence	" "	1	15,000	5	Fish	1
4. Chuker Guzzler Maint.	" "	1	1,000	1	Big game	1
5. Trickle Mtn Fence	" "	1	4,500	1.5	Big game	2
6. Prospect Res.	" "	2	2,000	1	Big game	2
7. Cedar Spring Res.	" "	2	2,000	1	Big game	2
8. Wildlife catchments	" "	4	15,000	6	Big game	2
9. Reservoir Bentonite	" "	2	3,000	5	Big game	2
10. Spring Exclosures	" "	2	2,500	8	Big game	2
11. Tuttle Creek Stream Improv.	" "	2	500	2 mi	Rio Grande Cutthroat	2
12. Ford Creek Stream Improv.	" "	2	1,000	3.5 mi	Trout	2
13. Trickle Mtn Rd. Closures	" "	2	10,000	10	Big game	2

* Does not include man-months.

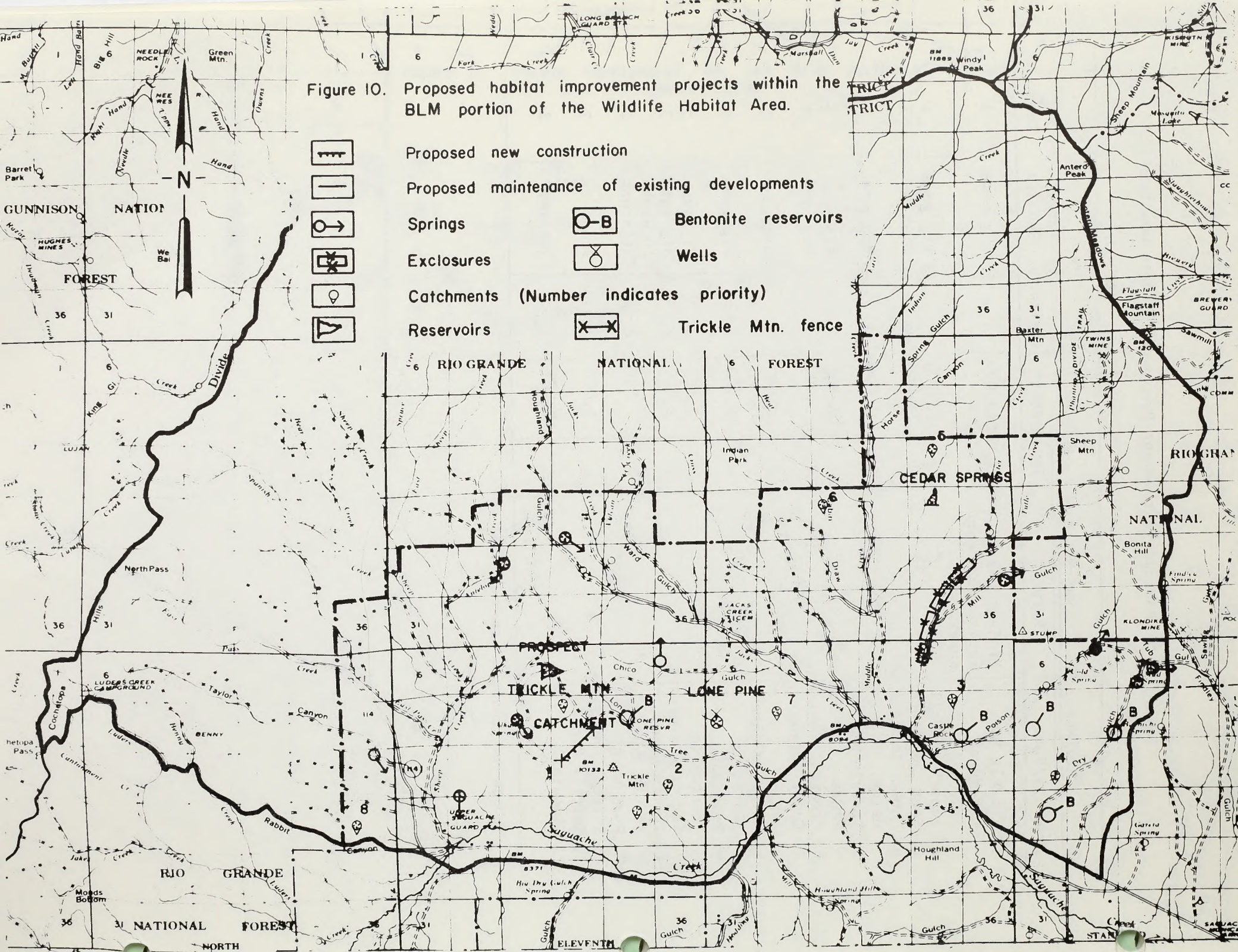


Figure 10. Proposed habitat improvement projects within the BLM portion of the Wildlife Habitat Area.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

HABITAT MANAGEMENT PLAN PROGRESS REPORT

OBJECTIVES	DATE COMPLETED	PLANNED ACTIONS	DATE COMPLETED	EVALUATIONS	DATE COMPLETED
G-1 Improve 60,000 acres of public lands for a variety of wildlife		a. Construct 1.5 miles of fence to exclude livestock from the southern slopes of Trickle Mtn. b. Develop new and/or maintain existing water sources (see Figure 10). c. Construct exclosures around springs, wet meadows and riparian vegetation to regulate livestock use (see Figure 10). d. Coordinate all timber harvest between forestry and wildlife activities. e. Implement access plan. f. Regulate livestock grazing as described in AUM's.		1. Diet overlap studies 2. Browse utilization transects 3. Scat transects 4. Population estimates (aerial counts, etc.) 5. Harvest data 6. Riparian inventories	
BS-1. Improve crucial winter range for bighorn sheep around Trickle Mtn.		a. Regulate livestock grazing as described in AMP's. b. Develop new and/or maintain existing water sources (See Figure 10). c. Implement access plan.			

INSTRUCTIONS

1. List specific objectives as developed in MFP or as otherwise approved.
2. List specific planned actions to be initiated to meet each specific objective.
3. List scheduled studies and evaluations planned in evaluating accomplishments.
4. Enter date that each objective, action, or evaluation is accomplished.

GPO 838 - 506

Form 6620-3 (December 1976)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

HABITAT MANAGEMENT PLAN PROGRESS REPORT

OBJECTIVES	DATE COMPLETED	PLANNED ACTIONS	DATE COMPLETED	EVALUATIONS	DATE COMPLETED
Md-1. Improve habitat conditions on 20,000 acres of mule deer winter range and 60,000 acres of yearlong range		a. Construct 1.5 miles of fence to exclude livestock from the southern slopes of Trickle Mountain. b. Implement access plan. c. Develop new and/or maintain existing water sources (see Figure 10). d. Construct exclosures around springs, wet meadows and riparian vegetation to regulate livestock use (see Figure 10). e. Coordinate all timber harvest between forestry and wildlife activities. f. Implement access plan. g. Regulate livestock grazing as described in the AMP's.		1. Occular reconnaissance 2. Diet overlap studies 3. Pellet transects 4. Population estimates (aerial counts, etc.) 5. Harvest data 6. Diet overlap studies	
P-1. Maintain 40,000 acres of yearlong pronghorn habitat.		a. Develop new and/or maintain existing water sources (see Figure 10).		1. Diet overlap studies. 2. Vegetation utilization transects. 3. Pellet transects	

INSTRUCTIONS

1. List specific objectives as developed in MFP or as otherwise approved.
2. List specific planned actions to be initiated to meet each specific objective.
3. List scheduled studies and evaluations planned in evaluating accomplishments.
4. Enter date that each objective, action, or evaluation is accomplished.

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HABITAT MANAGEMENT PLAN PROGRESS REPORT

OBJECTIVES	DATE COMPLETED	PLANNED ACTIONS	DATE COMPLETED	EVALUATIONS	DATE COMPLETED
		b. Construct exclosures around springs to exclude livestock use (see Fig. 10).		4. Population estimates (aerial counts, etc.)	
		c. Implement access plan		5. Harvest data	
		d. Regulate livestock grazing as described in AMP's.		6. Occular reconnaissance	
AS-1 Maintain approximately 3900 acres of Ponderosa Pine habitat		a. Coordinate all timber harvest between forestry and wildlife activities		1. Occular reconnaissance	
R-1. Protect 15 raptor nesting sites or a minimum of 5 lineal miles of suitable nesting rimrock cliffs.		a. Coordinate all timber harvest between forestry and wildlife activities.		1. Annual raptor nest site occular reconnaissance	
		b. Implement access plan			
		c. Disallow prospecting and mining within 1/4 mile of any active raptor nests.			
F-1. Establish a minimum population of 250 adult Rio Grande cutthroat trout in Tuttle Creek	9/13/77	a. Derris Tuttle Creek to remove all competition before release of cutthroat.	8/30/77	1. Electro fish the creek yearly to insure no competition is entering the stream.	
		b. Place a barrier on Tuttle Creek to prevent upstream movement of competitive species.	7/15/77		

INSTRUCTIONS

1. List specific objectives as developed in MFP or as otherwise approved.
2. List specific planned actions to be initiated to meet each specific objective.
3. List scheduled studies and evaluations planned in evaluating accomplishments.
4. Enter date that each objective, action, or evaluation is accomplished.

GPO 838-506

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UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

HABITAT MANAGEMENT PLAN PROGRESS REPORT

OBJECTIVES	DATE COMPLETED	PLANNED ACTIONS	DATE COMPLETED	EVALUATIONS	DATE COMPLETED
		c. Maintain the barrier structure on Tuttle Creek to insure its original intent.		2. Visual check of barrier to make sure it is serving its original intent.	
F-2. Improve 2 miles of Tuttle Creek riparian and aquatic communities.		a. Retain livestock grazing as it now exists so the riparian and aquatic communities are kept in their present condition.		1. Inspect allotment during use to insure no violations are occurring.	
		b. File for an instream flow to insure a minimal flow in Tuttle Creek.		2. Measure flow of creek at critical times of year to check the flow.	
		c. By use of log jams, trash collectors and rock dams, improve the pool/riffle ratio on Tuttle Creek.		3. Run aquatic transects to monitor results.	
F-3. Improve 3 miles of aquatic/riparian habitat in Ford Creek to allow maintenance of a productive fishery and increase numbers of species diversity of terrestrial wildlife.		a. File for instream flow on Ford Creek to insure a minimal flow for the fishery.		1. Run flow measurements at critical times of year.	
		b. Place three inclosures on Ford Creek to study effects of livestock grazing on the riparian vegetation. After completion of study results will be implemented	7/30/77	2. Complete aquatic and riparian transects over the next 4 years.	

INSTRUCTIONS

1. List specific objectives as developed in MFP or as otherwise approved.
2. List specific planned actions to be initiated to meet each specific objective.
3. List scheduled studies and evaluations planned in evaluating accomplishments.
4. Enter date that each objective, action, or evaluation is accomplished.

GPO 838 - 506

Form 6620-3 (December 1976)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

HABITAT MANAGEMENT PLAN PROGRESS REPORT

OBJECTIVES	DATE COMPLETED	PLANNED ACTIONS	DATE COMPLETED	EVALUATIONS	DATE COMPLETED
		to entire creek. c. Maintain the enclosures on Ford Creek for duration of the study. d. By use of log jams, trash collectors, and rock dams, create a better pool/riffle ratio.		3. Visual check of fences to insure complete exclosure of livestock 4. Run transect to check results of improvements.	
F-4. Decrease the sediment load being carried to the lower reaches of Sheep Creek to between 0.1 to 0.2 acre feet/ square mile per year.		a. Intensify livestock management within the Sheep Creek drainage to improve the watershed to reduce sediment runoff.		1. Readjustment of allotment AUM's and season use.	

INSTRUCTIONS

1. List specific objectives as developed in MFP or as otherwise approved.
2. List specific planned actions to be initiated to meet each specific objective.
3. List scheduled studies and evaluations planned in evaluating accomplishments.
4. Enter date that each objective, action, or evaluation is accomplished.

GPO 838 - 506

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E. COORDINATION WITH OTHER PROGRAMS AND AGENCIES

1. Forest Management.

Timbered stands are located in various parts of the Trickle Mountain WHA. These forest products are comprised mainly of pinon-juniper, Douglas fir and ponderosa pine. The pinon-juniper woodland's primary economic value is as fence posts and firewood. The ponderosa pine and Doublas fir stands could provide lumber and firewood.

In addition to the economic values of these forested areas, they provide nesting sites, escape cover from predators and protection from the weather. Consequently, forest practices on these lands can enhance or adversely effect wildlife populations to a significant degree.

Forested areas within the Trickle Mountain WHA (the BLM portion) comprise a small but important percentage of the total area. For this reason, all forested areas will be protected and managed to: maintain a variety of age classes; protect raptor nesting sites; protect Abert's squirrel habitat; protect existing timber stands, but at the same time prevent the spread of the forested areas into the grasslands and other valuable big game wintering areas.

Selective cutting to control mistletoe and to create small openings where needed, would be desirable. Young trees will be planted or propagated within existing forested areas to insure the presence of mature trees in the future.

All forest product sales or other forest management will be coordinated between the Forestry and Wildlife programs and the following stipulations incorporated:

COORDINATION WITH OTHER PROGRAMS/AGENCIES

a. Sale areas will be laid out to maximize edge effect and retain adequate cover within the sale area. The minimum distance to cover will vary on each timber sale, depending on vegetation, topographical, and wildlife features of the area.

b. Sale areas will be examined by a Wildlife Biologist or a qualified Wildlife Technician and all trees utilized by cavity nesters will be marked for protection.

c. Priority will be given to sales on sites having adequate understory vegetation for response to removal of overstory or to sites suitable for seeding after cutting operations.

d. Trees supporting raptor nests will not be harvested. In general, no harvesting will be permitted within one-quarter mile of an active raptor nest during the nesting season. The one-quarter mile standard is flexible depending on the raptor species involved. In the case of a peregrine falcon nest on cliffs overlooking forested areas, the limit would be greater, while the limit could be relaxed for a species that tolerates disturbances.

e. New road construction will be kept to a minimum and roads not needed after completion of the sale shall be physically closed and seeded.

f. A buffer strip will be maintained along all streams. The exact dimensions of the strip will be determined on an individual basis.

g. Operation of logging equipment will not be permitted in stream channels or wet meadows unless an exception is made by an interdisciplinary team.

2. Livestock Management.

Allotment Management Plans (AMP's) have been written for the seven

BLM livestock grazing allotments that are included in the Trickle Mountain WHA (see Figure 11). None of these AMP's have, as yet, been implemented. Implementation is dependant upon the outcome of the NRDC vs. BLM court decisions and departmental review of the "San Luis Resource Area Grazing Management Environmental Statement" and funding.

Wildlife values were identified during the writing of these AMP's. These values were considered when devising the grazing management systems. A brief summary of the pertinent data concerning the seven proposed grazing systems are presented in Table 14 (for more detailed information, see the allotment files in either the San Luis Resource Area Officer or the Canon City District Office).

Developments that have been proposed in the subject AMP's will be coordinated between the Range and Wildlife programs before construction begins and the following stipulations incorporated:

a. All new water developments will provide adequate provisions for wildlife use.

b. All watering areas will be maintained for yearlong wildlife use unless an exception is made after a review by an interdisciplinary team.

c. All stock tanks will have wildlife escape ramps.

d. Spacing for all new barbed wire fences is recommended as being 20", 35" and 39" above the ground with posts no further than 10 feet apart, but in no case will they exceed the height and spacing standards set forth in Bureau Manual 1737. Exceptions may be made after a review by an interdisciplinary team.

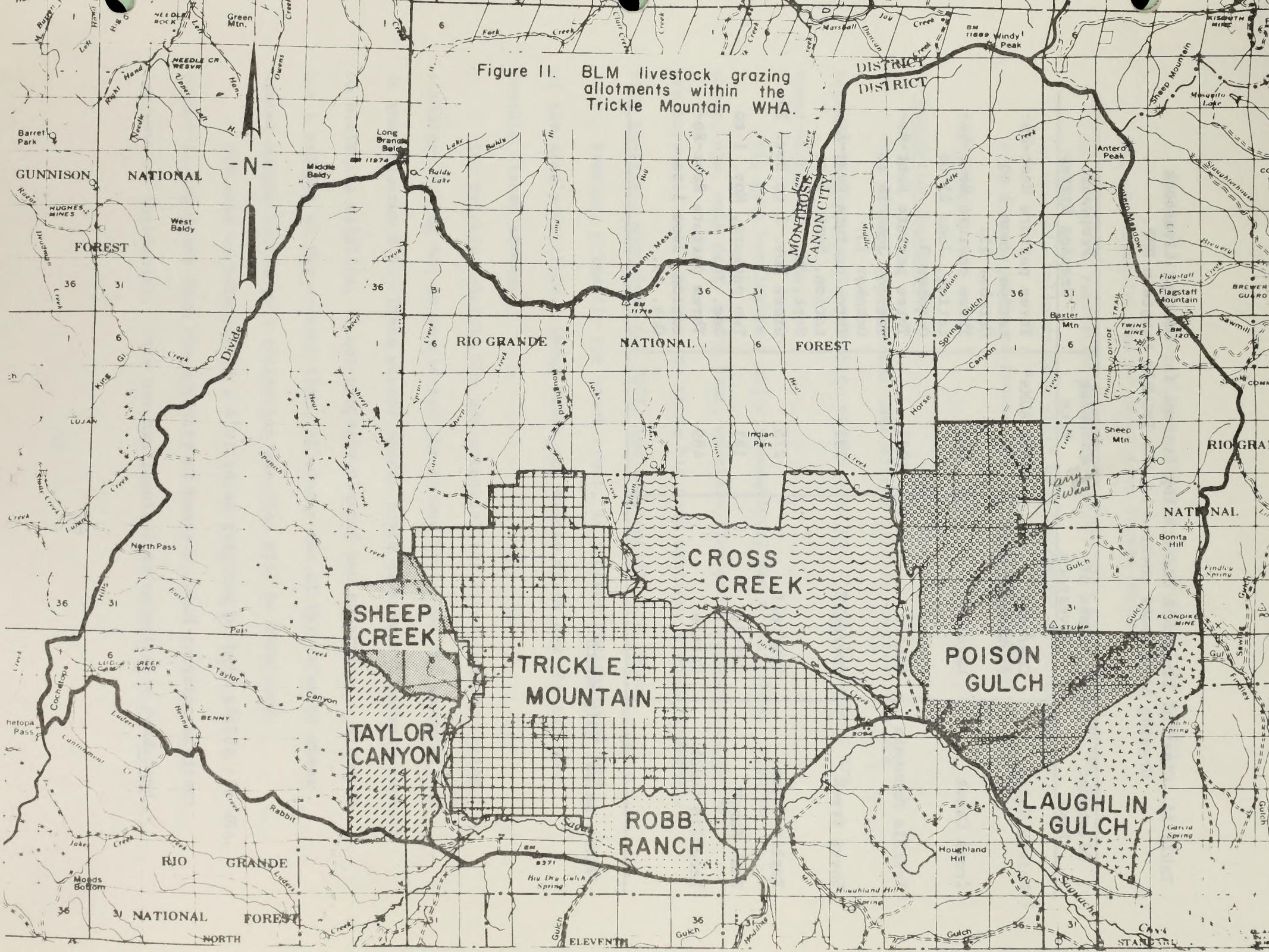


Figure 11. BLM livestock grazing allotments within the Trickle Mountain WHA.

Table 14. Class of livestock and Grazing Systems for the six Livestock Grazing Allotments covered by the Trickle Mountain HMP.

Allotment Name	Class of Livestock	Stocking Rate	Proposed Grazing System
Poison Gulch	Cow/calf Broodmare/colt	1002 AUMs*	Three pasture Rest-Rotation, June 1 to October 15.
Cross Creek	Cattle	542	Three pasture Rest-Rotation, June 25 to October 3.
Trickle Mountain	Cattle	1035	Three pasture Rest-Rotation, June 16 to October 15.
Sheep Creek	Cow/calf	233	Three pasture Rest-Rotation, Sept. 5 to Sept. 30.
Taylor Creek	Cow/calf	275	Graze Nov. 1 to Nov. 30.
Robb Ranch	Cattle	191	Two pasture, Nov. 1 to Dec. 30.
Laughlin Gulch	Cattle	489	Three pasture Rest-Rotation, June 1 to Oct. 15.

*AUM - Animal Unit month

e. All existing fences will be altered as necessary to permit big game crossing and movement (see Bureau Manual 1737).

f. Plans for vegetation manipulation projects will be examined by an interdisciplinary team which will recommend stipulations on a site-by-site basis to insure protection or enhancement of wildlife values.

3. Recreation Management.

The primary recreational uses of the Trickle Mountain WHA are related to the visual attraction of the area and the wildlife that are found within the area.

Big game hunting is a major recreational use of this WHA. Bighorn sheep, elk, mule deer, black bear, mountain lion and pronghorn (antelope) are harvested. In addition to these big game species, grouse, snowshoe, pine squirrel, ptarmigan (on USFA) and conttontails are taken.

Fishing, primarily for brook trout, is another recreational use of the area's wildlife. Sheep Creek and Middle Creek are the two most heavily fished streams.

The Trickle Mountain WHA has potential for cross country skiing, sledding, tubing and is considered the second best area for snowmobiling in the Saguache P.U. These winter sports could have severe adverse impacts on wintering wildlife, if not properly planned and supervised. Although not a problem at the present time, if winter use of this area by these winter sports increases a recreation use plan will be developed.

Off road vehicle use (4 x 4's) is an existing problem within the WHA, primarily resulting from the activity of hunters, wood cutters, artifact hunters and sightseers. This use has resulted in undesirable roads and

and trails, damage to vegetation, soil disturbance and harassment of wildlife. Closure of these undesirable roads and proper signing of the area is necessary to properly manage the WHA.

The Trickle Mountain WHA is rich in historic and archeological values (see Saguache URA). These values will be located, identified and properly protected from both wildlife and livestock related habitat developments. An old cabin and a mine in the Sheep Creek area are examples of known sites with historic value.

The entire Trickle Mountain WHA falls within the Visual Sensitivity Rating of Class III. A Class III rating implies that man-made features should be visually subordinate elements in the surrounding landscape. All proposed developments will comply with Class III restrictions.

All recreation activity plans within the WHA will be coordinated between the Recreation program and the Wildlife program.

4. Watershed Management and Water Quality.

There are no watershed improvements proposed at the present time within the Trickle Mountain HMP area. However, many of the fisheries and wildlife habitat improvements will also result in an improvement of watershed conditions by increasing ground cover vegetation.

Most of the existing water quality parameters are well within the limits for cold water fisheries and meet State water quality minimum standards. The only exception is the amount of sediment that is being carried in Sheep Creek. This sediment is beginning to cover spawning grounds. Although not directly affecting the fish, this depositing of sediment does reduce the potential of mature fish to produce young (see Planned Action and Introduction for more data on Sheep Creek).

All watershed activities within the WHA will be coordinated between the Watershed program and the Wildlife program.

5. Wild Horse and Burro Management.

There are no known wild horses or burros within the Trickle Mountain WHA.

6. Minerals Development.

Past mining activity within the Trickle Mountain WHA has consisted mainly of prospecting for uranium, thorium, base and precious metals. Little or no production has occurred from mines in this area. A Minerals Report has been completed for the subject area and is included in Appendix B. This report indicates what is probably present and gives recommendations concerning mineral development potential and land status.

All proposed mineral activity within the WHA will be coordinated between the Minerals and Wildlife programs in an effort to minimize adverse impacts.

All mineral exploration and other surface disturbance resulting from any form of mining related action will require complete surface rehabilitation.

7. Fire Management.

Historically, fire played an important part in maintaining the Trickle Mountain area in a grassland-woodland mix. The present vegetation complex is suitable for the purposes of management of the priority species selected for this WHA.

The goal of the fire management program will be to maintain the same approximate vegetation complex that presently exists. Prescribed burning is not recommended for use within the WHA at this time. However,

this management tool may be selected in the future, depending on the outcome of ongoing or proposed research projects.

Protection of all woody vegetation is of prime concern at this time. Grass fires are of secondary concern because this vegetation type will respond much more favorably and quicker to fire damage.

A fire protection agreement was signed with Saguache County in 1975. This agreement is still in effect and covers the Trickle Mountain WHA. However, because of the limited equipment and manpower available to Saguache County any major fire protection will have to be provided by BLM or USFS.

8. Support Activities.

a. Access. Access problems within the Trickle Mountain WHA result from too much access and not a lack of access. Many roads and trails have been created as a result of offroad vehicle use of hunters and sightseers.

All roads and trails except thos indicated on Figure 9 will be physically closed and signed. These closures would result in over 20 miles of roads and trails being taken out of use. The remaining road system would provide adequate access for hunters, sightseers, BLM personnel and allottees.

b. Land Acquisition Classification and Withdrawal. Several land exchanges have been proposed within the WHA during the past 8 to 10 years. None of these exchanges have taken place as of this time, however, one proposal is still pending. Approximately 240 acres of Public Lands have been requested in exchange for 160 acres of private (see Figure 12, plus 80 acres in T 44 N. R 8 E: E½SE¼ Section 21, that is outside the

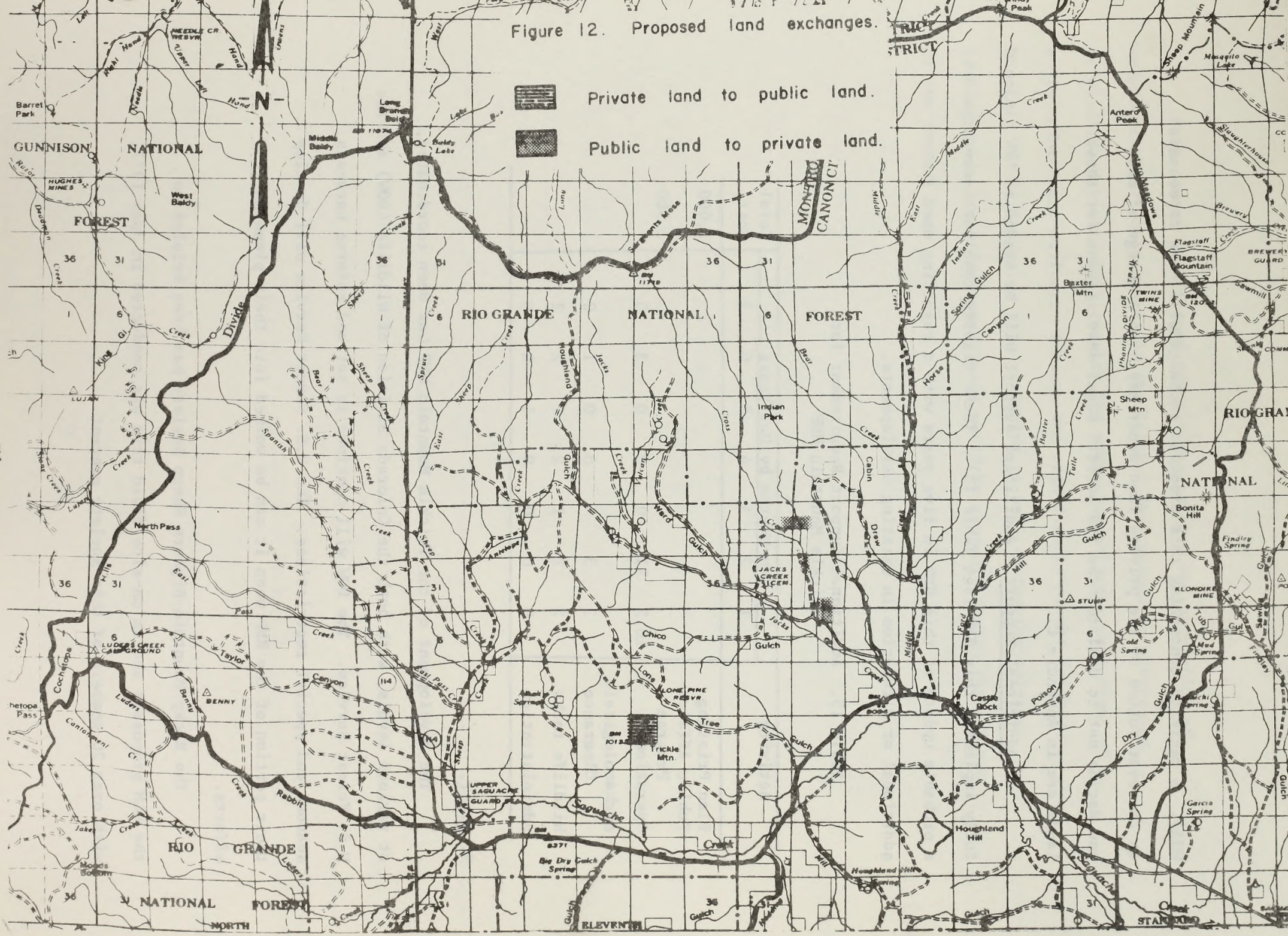


Figure 12. Proposed land exchanges.

WHA). A decision concerning this proposed exchange will have to be made in the near future or the private land owner may have a change of mind and decide not to deal for the 160 acres. Legal descriptions for these lands are in Appendix C.

c. Additional Support. Additional support will be needed to fully implement this HMP (see Table 15). These figures take into account a probable update of this HMP in five years with a resulting need for additional or alteration in existing developments.

Table 15. Additional Support Requirement for Trickle Mountain HMP

Activity	Man Months by Out Years							Total Cost
	1	2	3	4	5	6	7	
Plan Printing								1,000
Public Affairs Program								2,500
Operation	10.5	11	0	0	0	3	0	
Archaeological Clearance	3	3		0	0	1	0	
Wildlife techs	2	2	2	2	2	2	2	
Administration	0	0	0	0	1	0	0	

9. Other.

The development of the Trickle Mountain HMP has been coordinated, at various levels, with both the Colorado Division of Wildlife (DOW) and the U.S. Forest Service. The DOW will continue to set and enforce harvests, seasons and special restrictions. The U.S. Forest Service will develop their portion of the HMP when it can be worked into their planning efforts.

The Rocky Mountain Bighorn Sheep Society has been briefed on the BLM proposals and an on-site field trip was conducted in June 1977, with over 20 members of this society present.

Enforcement of off-road vehicle regulations and prevention of other acts that would result in the illegal destruction or alteration of wildlife habitat would require the presence, at least part time, of a law enforcement officer. Because the significance of the Trickle Mountain WHA is its value as a wintering as well as fawning-calving-lambing area, law enforcement needs would be greatest during these times of the year.

Activity Wildlife (4350)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

EAR FACE SHEET

OFFICE: Canon City District FY & REPORT # CO-050-8-5

ACTION: Trickle Mountain HMP NO. OF PAGES
(Project Name, Case Type, etc.)

LOCATION: San Luis Valley SERIAL NO. C.-

REQUIRED BY 43 CFR 23: YES ☐ NO ☐

TEAM SIGNATURES:	TITLE	RESOURCE VALUES ASSIGNED	HOURS
[illegible]	Wildlife Biologist	Terrestrial	12
Donald E. Richard	Fisheries Biologist	Aquatic	2

ENVIRONMENTAL COORDINATOR: Steven Leskosky (Signature) 10/18/77 (Date)

COMPLIANCE OFFICER: Area Manager (Title or Name)

DISTRICT MANAGER: Stewart A. Wheeler (Signature)

10-31-77 (Date)

CSO 1790-1 (Aug. 1975)

ENVIRONMENTAL ANALYSIS
RECORD

F. Environmental Assessment Record (EAR)

1. Description of the proposed action.

The proposed action is to implement the BLM's Trickle Mountain Habitat Management Plan (HMP) and to complete all habitat manipulation projects and support actions as described in that document. The goal of this plan is to maintain and/or increase wildlife propulations, as described in detail in the HMP. A complete listing of these projects and actions is contained in Section D (Planned Actions) of the subject HMP.

For the convenience of analysis, these projects and actions can be categorized by general objectives. The environmental impacts associated with projects within each category will be similar enough to be covered in one analysis per category. The projects and actions have been categorized as follows:

a. Development of water sources (see Figure 10 of HMP)

1. Construct and bentonite two reservoirs (Cedar Springs and Prospect).
2. Construct one well (Lone Pine.)
3. Install eight small rain catchments.
4. Construct one large rain catchment (Trickle Mountain).
5. Construct fences around eight springs.

b. Maintain existing water sources (see Figure 10 of HMP).

1. Bentonite five existing reservoirs
2. Maintain fences around two springs.
3. Maintain one chukar guzzler.

c. Fencing (see Figure 10 of HMP)

1. Approximately 1.5 miles of fence

2. Riparian and aquatic exclosures, approximately five miles of fence.

d. Stream improvements.

1. Approximately two miles of instream improvements in Tuttle Creek.

2. Approximately 3.5 miles of instream improvements in Ford Creek.

e. Habitat protection.

1. Improve or protect approximately 1800 acres of big game habitat by eliminating livestock grazing.

2. Reduce livestock grazing within Sheep Creek drainage to reduce sediment runoff.

3. Complete land exchanges.

4. Physically close and sign over 20 miles of roads and trails.

f. Studies.

1. Big game - livestock diet overlap study

2. Riparian and aquatic habitat exclosure studies

3. Big game utilization monitoring.

4. Raptor nest site locations and monitoring.

5. Water quality monitoring.

The time table for implementing these proposed actions are discussed in Planned Action 2 section of this HMP.

2. Description of the environment affected.

A description of the areas impacted by the proposed actions is contained in Section A (Introduction) of the HMP. Additional descriptions can be found in the Saguache P.U.'s Unit Resource Analysis (URA).

3. Analysis of the proposed action and alternative.

Alternatives to the proposed action of implementing an HMP were presented and analyzed in the URA and MFP process. Based on the analysis covered in these documents the alternatives were not feasible and it was decided to develop and initiate the Trickle Mountain HMP.

Alternatives to the specific projects and actions exist and included the following for each category:

a. Development of water sources.

The construction of reservoirs, rain catchments and a well will result in soil and vegetal disturbance. A related loss of wildlife nesting/denning habitat and escape cover will also result from these actions. Some degree of wildlife harassment will result from the people and equipment being in the area.

The impacts on soil and vegetation can be partially mitigated by use of existing roads and trails whenever possible. These mitigating measures would also reduce the impacts on nesting/denning habitat and escape cover. Wildlife harassment could be lessened by requiring all construction to be implemented during the late summer-fall period. This would avoid the critical winter and nesting/denning periods.

Even with the implementation of mitigating measures some degree of soil, vegetation and nest/den disturbance will result from these actions.

The short-term use of the Trickle Mountain WHA by wildlife would be altered slightly and only locally as a result of the proposed actions. The long-term productivity of the WHA would be greatly enhanced because the additional watering sites would allow for better wildlife distribution and therefore, better overall use.

ALTERNATIVES:

1. No actions. The development of additional sources of water is the basic need that has been identified for this WHA. Therefore, this alternative is not viable if the HMP is to be implemented.

2. Change location of the proposed watering sites. The site location for each proposed water source was selected after a detailed field search. Any alternative site would probably not be as suitable to obtain the desired objectives.

3. Develop additional water sources, other than those covered in the HMP. All watering sites that are needed to accomplish the HMP objectives have been identified. Additional sites would not be justified at this time.

b. Maintain existing water sources.

The maintenance of existing water sources is a relatively inexpensive means of increasing available water with a minimum of environmental damage. All work on these sites will take place on areas that have already been disturbed by human influence.

ALTERNATIVES:

1. No action. To achieve the HMP objectives, water is needed at these sites. Therefore, if these existing sites are not maintained, new sources of water will be needed in approximately the same locations as these existing sites. This would result in greater surface disturbance and more adverse environmental impacts.

c. Fencing.

The most significant impact of the proposed fencing will result

from the restriction of free and unimpeded movement of wildlife and livestock. Some surface disturbance will take place during fence construction and maintenance. Some degree of wildlife harassment will result from the human and vehicle activity in the area.

The purpose of the proposed fencing is to impede the free movement of livestock. Therefore, that impact cannot be avoided. However, proper fence design and location would reduce the impacts on wildlife movement. The impacts on surface disturbance would be reduced by utilization of existing roads, trails and other disturbed areas whenever possible. The impacts of wildlife harassment would be reduced if all construction activity avoided the winter and spring critical periods.

The long-term productivity of the WHA would be improved as a result of the proposed fencings and their related improvement in livestock management.

ALTERNATIVES:

1. No action. This alternative would result in continued unrestricted livestock use of critical bighorn sheep range and valuable riparian vegetation, which would be contrary to the objectives of the Trickle Mountain HMP.

d. Stream improvements.

Impacts upon the creek's bottom flora and fauna would result from the movement of rocks and the creation of pools and riffles. These impacts would be minor and of short duration. The long-term productivity would be greatly enhanced, thereby, reducing the overall net adverse impacts.

ALTERNATIVES:

1. No action. This alternative would result in no significant change in the two creeks' productivity or fish populations.

e. Road closures.

No adverse environmental impacts would result from this action. Less wildlife harassment and less surface disturbance would result from proposed closures.

ALTERNATIVES:

1. No action. This alternative would result in a continued degradation of the environment and continued wildlife harassment. Damage to forage, escape cover, soil and nesting/denning sites would continue.

f. Land exchange.

An EAR has already been prepared for this action (see Trickle Mountain Case File, Virginia Southerland).

4. Public Interest and/or Controversy.

No controversy is known to exist over the proposed actions at this time. The USFS, DOW and concerned publics have been in contact with BLM and have been given an opportunity for input.

5. Recommendations of Preferred Action.

It is recommended that the actions covered in Section D (Planned Actions) of the Trickle Mountain HMP be implemented as scheduled.

IMPLEMENTATION SCHEDULE AND COST ESTIMATE

G. IMPLEMENTATION SCHEDULE AND COST ESTIMATE

Program Package forms 1610-27 and 1610-28 have been completed for the HMP and are presented on the following pages. The entire HMP serves as the narrative that is required by Bureau Manual 1612-26-A for Program Packages.

Additional temporary positions will be required to fully implement this HMP. These new positions include:

Position, Title and Grade	1978	1979	1980	1981	1982	1983
Wildlife tech GS-5	1@3mm	1@5mm	1@5mm	1@3mm	1@4mm	1@4mm
Engineering tech GS-5		1@6mm	1@7mm 1@8mm			

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

PROGRAM PACKAGE COVER SCHEDULE

PACKAGE IDENTIFICATION	STATE	PY	Priority	Package Life
	0 5	7 9	2	3

Package Name: Trickle Mountain HMP

Package Purpose: Improve habitat for Bighorn sheep, Elk, Mule deer, Pronghorn and Rio Grande Cutthroat trout.

Program Area: Trickle Mountain CO-05WHA-3

(1)	CURRENT YEAR FY 1977 (2)	BUDGET YEAR FY 1978 (3)	PROGRAM YEAR FY 1979 (4)	PROGRAM YEAR + 1 FY 1980 (5)	PROGRAM YEAR + 2 FY 1981 (6)	PROGRAM YEAR + 3 FY 1982 (7)	PROGRAM YEAR + 4 FY 1983 (8)	TOTAL (9)	AVG. ANNUAL PROGRAM OPERATIONS FY 19 (10)
A. COST DATA	$000'S	$000'S	$000'S	$000'S	$000'S	$000'S	$000'S	$000'S	$000'S
Total Costs (Form 1610-28)		15.3	71.2	88.1	8.5	15.3	10.2		
Construction (Form 1610-28)			44.0	40.5					
Construction Maintenance (Form 1610-28)			0	0					
Total Costs Less Construction and Maintenance		15.3	27.2	47.6	8.5	15.3	10.2		
WASHINGTON OFFICE USE ONLY									
B. MANPOWER DATA	MAN-MONTHS	MAN-MONTHS	MAN-MONTHS	MAN-MONTHS	MAN-MONTHS	MAN-MONTHS	MAN-MONTHS	MAN-MONTHS	MAN-MONTHS
Permanent	6	6	5	7	2	4	2		
Temporary	2	3	11	21	3	5	4		
C. OUTPUT AND WORKLOAD MEASURE DATA	QUANTITY	QUANTITY	QUANTITY	QUANTITY	QUANTITY	QUANTITY	QUANTITY	QUANTITY	QUANTITY
Construction of large water catchment (Trickle Mountain Catchment) a			1						
b			0						
c			1						
Construction of well (Lone Pine Well) a			1						
b			0						
c			1						
Miles of fence (Ford Creek) a			5						
b			0						
c			5						
Maintenance of Chuckar Guzzler a			1						
b			0						
c			1						
Miles of fence (Trickle Mountain fence) a				1.5					
b				0					
c				1.5					
Reservoir Construction and Bentonite (Prospect and Cedar Spring) a				2					
b				0					
c				2					

(Instructions on reverse)

Form 1610-27 (October 1974)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

PROGRAM PACKAGE COVER SCHEDULE

PACKAGE IDENTIFICATION: STATE | PY

Priority

Package Life

Package Name

Package Purpose

Program Area

(1)		CURRENT YEAR FY 19 77 (2)	BUDGET YEAR FY 19 78 (3)	PROGRAM YEAR FY 1979 (4)	PROGRAM YEAR + 1 FY 1980 (5)	PROGRAM YEAR + 2 FY 19 81 (6)	PROGRAM YEAR + 3 FY 1982 (7)	PROGRAM YEAR + 4 FY 1983 (8)	TOTAL (9)	AVG. ANNUAL PROGRAM OPERATIONS FY 19 (10)
A. COST DATA		$000'S	$000'S	$000'S	$000'S	$000'S	$000'S	$000'S	$000'S	$000'S
Total Costs (Form 1610–28)										
Construction (Form 1610–28)										
Construction Maintenance (Form 1610–28)										
Total Costs Less Construction and Maintenance										
WASHINGTON OFFICE USE ONLY										
B. MANPOWER DATA		MAN-MONTHS	MAN-MONTHS	MAN-MONTHS	MAN-MONTHS	MAN-MONTHS	MAN-MONTHS	MAN-MONTHS	MAN-MONTHS	MAN-MONTHS
Permanent										
Temporary										
C. OUTPUT AND WORKLOAD MEASURE DATA		QUANTITY	QUANTITY	QUANTITY	QUANTITY	QUANTITY	QUANTITY	QUANTITY	QUANTITY	QUANTITY
Construction of small water catchments	a	0			6					
	b	2			0					
	c	2			6					
Bentonite existing reservoirs	a				5					
	b				0					
	c				5					
Construction of spring exclosures	a				8					
	b				0					
	c				8					
Maintenance of spring exclosures	a	0								
	b	2								
	c	2								
Miles of stream improvement (Tuttle Creek) for threatened species	a				2					
	b				0					
	c				2					
Miles of stream improvement (Ford Creek)	a				3					
	b				0					
	c				3					

(Instructions on reverse)

Form 1610–27 (October 1974)

PACKAGE IDENTIFICATION	STATE	FY	Priority	Package Life

Package Name

Package Purpose

Program Area

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

PROGRAM PACKAGE COVER SCHEDULE

(1)		CURRENT YEAR FY 1977 (2)	BUDGET YEAR FY 1978 (3)	PROGRAM YEAR FY 19 79 (4)	PROGRAM YEAR + 1 FY 1980 (5)	PROGRAM YEAR + 2 FY 1981 (6)	PROGRAM YEAR + 3 FY 1982 (7)	PROGRAM YEAR + 4 FY 1983 (8)	TOTAL (9)	AVG. ANNUAL PROGRAM OPERATIONS FY 19 (10)
A. COST DATA		$000'S	$000'S	$000'S	$000'S	$000'S	$000'S	$000'S	$000'S	$000'S
Total Costs (Form 1610–28)										
Construction (Form 1610–28)										
Construction Maintenance (Form 1610–28)										
Total Costs Less Construction and Maintenance										
WASHINGTON OFFICE USE ONLY										
B. MANPOWER DATA		MAN-MONTHS	MAN-MONTHS	MAN-MONTHS	MAN-MONTHS	MAN-MONTHS	MAN-MONTHS	MAN-MONTHS	MAN-MONTHS	MAN-MONTHS
Permanent										
Temporary										
C. OUTPUT AND WORKLOAD MEASURE DATA		QUANTITY	QUANTITY	QUANTITY	QUANTITY	QUANTITY	QUANTITY	QUANTITY	QUANTITY	QUANTITY
Road closures within WHA (barriers & signs)	a				10					
	b				0					
	c				10					
Acres of riparian habitat improved (Ford Creek)	a				40					
	b				0					
	c				40					
Threatened species protected	a	0								
	b	1								
	c	1								
Stream improvement by reduction in sediment load acre feet/mile/yr (Sheep Crk)	a			0.175	0.150	0.125	0.1	0.1		
	b			0	0	0	0	0		
	c			0.175	0.150	0.125	0.1	0.1		
Increase big game hunter days per year	a						20	30		
	b						0	0		
	c						20	30		
Increase small game hunter days per year	a					40	10	10		
	b					0	0	0		
	c					40	10	10		

(Instructions on reverse)

Form 1610–27 (October 1974)

PACKAGE IDENTIFICATION	STATE	PY	Priority	Package Life

Package Name

Package Purpose

Program Area

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

PROGRAM PACKAGE COVER SCHEDULE

(1)		CURRENT YEAR FY 1977 (2)	BUDGET YEAR FY 1978 (3)	PROGRAM YEAR FY 1979 (4)	PROGRAM YEAR + 1 FY 1980 (5)	PROGRAM YEAR + 2 FY 1981 (6)	PROGRAM YEAR + 3 FY 1982 (7)	PROGRAM YEAR + 4 FY 1983 (8)	TOTAL (9)	AVG. ANNUAL PROGRAM OPERATIONS FY 19 (10)
A. COST DATA		$000'S	$000'S	$000'S	$000'S	$000'S	$000'S	$000'S	$000'S	$000'S
Total Costs (Form 1610–28)										
Construction (Form 1610–28)										
Construction Maintenance (Form 1610–28)										
Total Costs Less Construction and Maintenance										
WASHINGTON OFFICE USE ONLY										
B. MANPOWER DATA		MAN-MONTHS	MAN-MONTHS	MAN-MONTHS	MAN-MONTHS	MAN-MONTHS	MAN-MONTHS	MAN-MONTHS	MAN-MONTHS	MAN-MONTHS
Permanent										
Temporary										
C. OUTPUT AND WORKLOAD MEASURE DATA		QUANTITY	QUANTITY	QUANTITY	QUANTITY	QUANTITY	QUANTITY	QUANTITY	QUANTITY	QUANTITY
Increase fisherman days per year	a			10	10	10	10	10		
	b			0	0	0	0	0		
	c			10	10	10	10	10		
Increase non-consumptive visitor days per year	a			100	100	100	150	150		
	b			0	0	0	0	0		
	c			100	100	100	150	150		
Acres of wildlife Habitat Improved	a			5,000	15,000	15,000	15,000	10,000		
	b			0	0	0	0	0		
	c			5,000	15,000	15,000	15,000	10,000		
	a									
	b									
	c									
	a									
	b									
	c									
	a									
	b									
	c									

(Instructions on reverse)

Form 1610–27 (October 1974)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

PROGRAM PACKAGE INPUTS SCHEDULE

PACKAGE IDENTIFICATION			
0	5	7	9
STATE		PY	

Package Name: Trickle Mountain HMP

SUBACTIVITY AND POSITION IDENTIFICATION	CURRENT YEAR FY 19 77			BUDGET YEAR FY 19 78			PROGRAM YEAR FY 19 79			PROGRAM YEAR + 1 FY 19 80			PROGRAM YEAR + 2 FY 19 81			PROGRAM YEAR + 3 FY 19 82			PROGRAM YEAR + 4 FY 1983		
	TOTAL COST (000's)	POSI-TIONS	M/M	TOTAL COST (000's)	POSI-TIONS	M/M	TOTAL COST (000's)	POSI-TIONS	M/M	TOTAL COST (000's)	POSI-TIONS	M/M	TOTAL COST (000's)	POSI-TIONS	M/M	TOTAL COST (000's)	POSI-TIONS	M/M	TOTAL COST (000's)	POSI-TIONS	M/M
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)
4210 - Lands & Realty				1.7	0	1	1.7	0	1												
Permanent				1.7	0	1	1.7	0	1												
Temporary				0	0	0	0	0	0												
4310 - Forest Management							3.4	0	2	1.7	0	1	1.7	0	1	1.7	0	1	1.7	0	1
Permanent							3.4	0	2	1.7	0	1	1.7	0	1	1.7	0	1	1.7	0	1
Temporary							0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4330 - Recreation Management				3.4	0	2	3.4	0	2	1.7	0	1									
Permanent				3.4	0	2	3.4	0	2	1.7	0	1									
Temporary				0	0	0	0	0	0	0	0	0									
4350 - Wildlife Habitat Management				15.3	1	9	71.2	1	16	88.1	3	28	8.5	1	5	15.3	1	9	10.2	1	6
Permanent				10.2	0	6	8.5	0	5	11.9	0	7	3.4	0	3	6.8	0	4	3.4	0	2
Temporary				5.1	1	3	18.7	2	11	35.7	3	21	5.1	1	2	8.5	1	5	6.8	1	4

(Instructions on reverse)

Form 1610-28 (October 1974)

MANAGEMENT EVALUATIONS AND REVISION

H. MANAGEMENT EVALUATIONS AND REVISION

The Canon City District (BLM) is cooperating with Colorado State University in conducting studies relating to diet overlap between big game species and livestock. The results of these studies should be available by the end of 1979. The Trickle Mountain HMP will be revised, as needed, when these studies or other pertinent data become available, but no later than 1982.

Table 16 lists the studies that will be required to monitor the impacts of the proposed actions.

Table 16. Studies Required to Monitor the Trickle Mountain HMP

Type of Study	Method	Time Frame	Responsibility	Results expected
Diet overlap	fecal analysis	9-77 to 12-79	Colo. St. University	Indicate the degree of diet overlap between bighorn sheep, elk, mule deer, pronghorn and domestic livestock
Browse utilization	Field Transect	Annual, in spring	BLM, Colo. DOW	% utilization, form class, vigor & age of browse
Pellet counts	Field Transect	Annual in spring	BLM, Colo. DOW	Indicate use areas and relative abundance
Population estimates (Bighorn sheep, elk, pronghorn, mule deer)	Aerial Counts	Annual, in winter	Colo. DOW	Indication of whether objectives are being met.
Harvest (Bighorn sheep, elk, mule deer, pronghorn)	Standard method used by Colo. DOW for hunter survey	Annual	Colo. DOW	Used in conjunction with population estimates will indicate overall population condition & trend in utilization of area
Riparian Inventory	Field Transect	Annual in spring	BLM	Indicate response of riparian habitat to livestock grazing & the absence of livestock grazing.
Aquatic studies	Field Transect	Annual, in Summer	BLM	Condition of bottom flora & fauna as related to stream condition & fish food
Population estimates - (fish)	Electro-fish	Annual, Summer	BLM	Indicate population size, condition and trend
Water Quality	Hach Kit	Annual, Summer	BLM	Indication of the amount of pollution & quality of fish habitat
Raptor nest sites	Occular Recon.	Annual, Spring	BLM	Indicate nesting occurence and relative densities

I. PUBLIC AFFAIRS

1. Issues. The Trickle Mountain WHA is an unique ecosystem. Bighorn sheep, mule deer, elk and pronghorn (antelope) are all found in the same restrictive location. This bighorn sheep population is one of the healthiest and most productive in Colorado. Bighorns have been transplanted from Trickle Mountain to several other locations within Colorado. All four of these big game species have been hunted in the last few years within the WHA.

2. Planning Effort. The Unit Resource Analysis and Management Framework Plan were completed for the Saguache P.U. in 1972. A livestock grazing Environmental Statement has been completed for the San Luis Valley, which includes the Trickle Mountain region. Allotment Management Plans were written as a part of this statement but have not, as yet, been implemented. No other activity plans have been completed covering the WHA.

3. Significance. Any actions that occur within the Trickle Mountain WHA have an impact on the local human population, and to a lesser extent the regional and national interest.

Many residents of Saguache County depend, at least in part, on tourists and hunters spending time and money in and around Trickle Mountain. The better the hunting or the more unaltered the landscape, the more people will be attracted to the area.

Regional and national interest is evident from the number of out-of-state and out-of-area tourists and hunters using the Trickle Mountain region.

PUBLIC AFFAIRS

4. Questions.

a. Is some form of habitat alteration or protection needed?

b. What are the desires of the publics, local, regional and national.

c. What is the best and most economical way of achieving the desired level of habitat improvement or protection?

d. What will be the favorable and undesireable impacts of the proposed actions?

5. Public Involvement Objectives. The major objectives of this plan are: to let the publics know what the BLM has done, is doing and wants to do; give the publics a chance to tell us what they want; and identify issues that are sensitive or critical to some segment of the public.

6. Public input. Public suggestions, complaints and statements will be used as guidance and support for formulation or alteration of existing plans and proposals.

7. Target groups.

a. Local residents and landowners

b. Hunters, tourists and wildlife conservation groups.

c. Teachers and students

d. Local, state and federal legislatures and other public officials

e. Other State and Federal agencies

f. Rocky Mountain Bighorn Sheep Society

Contact has already been made with State and Federal agencies that have an interest in this area. Also, local land owners, interested

citizens and wildlife conservation groups have been contacted and were given an opportunity to have input into the Trickle Mountain HMP.

CONCURRENCE AND
APPROVAL

J. CONCURRENCE AND APPROVAL.

The Trickle Mountain Wildlife Habitat Management Plan was prepared, reviewed and approved by the undersigned. Final approval date shall be that given by the last signature.

Prepared by: Mark A. Strong — 10/26/77
Mark Strong, Wildlife Biologist — Date
San Luis Resource Area, BLM

Clay D. Bridges — October 20, 1977
Clay Bridges, Wildlife Biologist — Date
Canon City District, BLM

Donald E. Prichard — October 21, 1977
Don Prichard, Fisheries Biologist — Date
Canon City District, BLM

Reviewed by:

Stuart A. Parker — 11/1/77
Stuart A. Parker, Chief of Resources — Date
Canon City District, BLM

Robert E. Vecchia — 10/26/77
Robert E. Vecchia, Area Manager — Date
San Luis Resource Area, BLM

Clayton Wetherill — 11-28-77
, Area Supervisor — Date
Colorado Division of Wildlife

Approved by:

Robert K. Rosette — 11/23/77
Robert K. Rosette, Regional Manager — Date
Colorado Division of Wildlife

Stewart A. Wheeler — 12-21-77
Stewart A. Wheeler, District Manager — Date
Canon City District, BLM

K. APPENDIX

A. Species Lists

1. Fauna

2. Flora

B. Minerals Report

C. Proposed Land Exchange Letter

D. Game Management Units (Colorado DOW)

E. BLM - Colorado State College Coop Research Background

MAPS AND APPENDIX

APPENDIX A

1. Fauna Species List

2. Flora Species List

APPENDIX A
TRICKLE MOUNTAIN WILDLIFE HABITAT AREA
WILDLIFE SPECIES LIST

This list that follows contains all the species of vertebrate wildlife which are known or believed to inhabit the Trickle Mountain WHA plus the invertebrates which are considered important either to the food chain or as human pests. Relative abundance and seasonal status of the vertebrates are coded as follows:

RELATIVE ABUNDANCE	SEASONAL STATUS
a - abundant	R - yearlong resident
c - common	S - summer resident
u - uncommon	W - winter resident
r - rare	M - migrant
	* - nesting bird

INVERTEBRATES

Common Name	Scientific Name	Importance
	Phylum Nematoda	
Lungworm	Protostrongylus stilesi	bighorn sheep parasite
	Phylum Mollusca	
Land snails	Vallonia pulchalla	(intermediate host for bighorn sheep lungworm)
Land snails	Papilla blandi	
	Phylum Arthropoda	
Hard ticks	Dermacentor spp.	
Mosquitoes	Family Culicidae	(biting pests and disease vectors)
Black flies	Family Simulidae	
Horseflies	Family Tabanida	(" ")
Biting midges ("no-see-ums")	Family Ceratopogonidae	(" ")
Ants	Family Formididae	(" ")

VERTEBRATES

FISH

Common Name	Scientific Name	Abundance
Brook trout	Salvelinus fontinalis	c
Rainbow trout	Salmo gairdneri	c
Cutthroat trout	Salmo clarki	u
Brown trout	Salmo trutta	c
White sucker	Catostomus commersoni	u

Common Name	Scientific Name	Abundance
Rio Grande sucker	Pantosteus plebeius	c
Rio Grande chub	Gila nigrescens	u
Longnose dace	Rhinichthys cataractae	u
Rio Grande shiner	Notropis femezanus	u

AMPHIBIANS

Western toad	Bufo boreas	u
Woodhouse's toad	Bufo woodhousei	u
Plains spadefoot	Scaphiopus bombifrons	u
Leopard frog	Rana pipiens	c
Tiger salamander	Amblystoma tigrinum	u

REPTILES

Eastern fence lizard	Sceloporus undulatus	u
Short horned lizard	Phyronosoma douglassi	c
Many-lined skink	Eumeces multivirgatus	u
Gopher snake	Pituophis melanoleucas	c
Milk snake	Lampropeltis triangulum	r
Common garter snake	Thamnophis sirtalis	c
Western terrestrial garter snake	Thamnophis elegans	u
Western rattle snake	Crotalus viridus	u

MAMMALS

Common Name	Scientific Name	Abundance/Habit Preference
Insect - Eaters	Insectivora	
Shrews	Soricidae	
Masked shrew	Sorex cinereus	r/ moist forests & brushlands
Merriam's shrew	Sorex merriami	r/ arid grass & brushlands
Vagrant shrew	Sorex vagrams	u/ marshes, streamsides

Common Name	Scientific Name	Abundance/Habitat Preference
	MAMMALS	
Water shrew	Sorex palustris	u/forestral streamsides and bogs
BATS	CHIROPTERA	
Plainnose bats	Vespertilionidae	
Little brown myotis	Myotis lucifugus	c/caves, hollow trees, buildings
Long-legged myotis	Myotis volans	u/crevices in rocky ledges
Small-footed myotis	Myotis subulatus	u/trees, hollow trees, caves, buildings
Silver-haired bat	Lasionycteris noctivagans	u/forested areas
Big brown bat	Eptesicus fuscus	c/caves, crevices, buildings
Hoary bat	Lasiurus cinereus	u/wooded areas
Western big-eared bat	Plecotus townsendii	u/caves & buildings
PIKAS, RABBITS & HARES	LAGOMORPHA	
Pikas	Ochotonidae	
Pika	Ochotona princeps	u/Talus slopes, rock slides
Hares & Rabbits	Leporidae	
Snowshoe hare	Lepus americanus	u/forested mountains and foothills
White-tailed jackrabbit	Lepus townsendii	c/open grass and brushy plains
Black-tailed jackrabbit	Lepus californicus	c/brushy and grassy plains
Mountain cottontail	Sylvilagus nuttailli	c/brushy, rocky slopes & forests
RODENTS	Rodentia	
Squirrels	Sciuridae	
Yellow-bellied marmot	Marmota flaviventris	u/rocky slopes
Gunnison's prairie dog	Cynomys gunnisoni	c/open mountain valleys

Common Name	Scientific Name	Abundance/Habitat Preference
Thirteen-lined ground squirrel	Spermophilus tridecemlineatus	u/short grass prairies
Rock squirrel	Spermophilus variegatus	u/rocky canyons
Golden-mantled ground squirrel	Spermophilus lateralis	c/mountain areas
Least chipmunk	Eutamias minimus	c/brushy deserts, conifers
Colorado chipmunk	Eutamias quadrivittatus	c/coniferous forest
Red squirrel	Tamiasciurus hudsonicus	u/coniferous forest
Tassel-eared squirrel (Abert squirrel)	Sciurus aberti	u/ponderosa pine forests
Pocket Gophers	Geomyidae	
Northern pocket gopher	Thomomys talpoides	c/prairies, mountain meadows, pine forests
Pocket Mice & Kangaroo Rats	Heteromyidae	
Ord's kangaroo rat	Dipodomys ordi	c/ arid sandy soils
Silky pocket mouse	Perognathus flavus	u/short grass prairies, sandy soil
Apache pocket mouse	Perognathus apache	u/sparse brush, scattered juniper and pines
Beavers	Castoridae	
Beaver	Castor canadensis	u/streams
Native Rats & Mice	Cricetidae	
Plains harvest mouse	Reithrodontomys montanus	u/upland prairies
Western harvest mouse	Reithrodontomys megalotis	u/grassland weedy areas near water
Deer mouse	Peromyscus maniculatus	c/all dryland habitats
Brush mouse	Peromyscus boylei	u/arid rocky brushland
Pinon mouse	Peromyscus truei	u/rocky areas of pinon & juniper

Common Name	Scientific Name	Abundance/Habitat Preference
Northern Grasshopper mouse	Onychomys leucogaster	c/Open brush or grassland
Mexican woodrat	Neotoma mexicana	u/mountainous rocky areas
Bushy-tailed woodrat	Neotoma cinerea	c/rocky open forest
Boreal redback vole	Clethrionomys grapperi	c/damp coniferous forests
Meadow vole	Microtus pennsylvanicus	c/grasslands near stream, lakes
Montane vole	Microtus montanus	c/brushlands of mountains valleys
Long-tailed vole	Microtus longicaudus	c/streambanks & mountain valleys
Muskrat	Ondatra zibethica	u/marshes, streams
Old World Rats & Mice	Muridae	
House mouse	Mus musculus	c/usually around habitation
Jumping Mice	Zapodidae	
Western jumping mouse	Zapus princeps	u/dense grasslands near streams
New World Porcupines	Erethizontidae	
Porcupine	Erethizon dorsatum	c/usually forests occasionally brushland
Fleshing-Eaters	CARNIVORA	
Foxes and Coyotes	Canidae	
Coyote	Canis latrans	c/area wide
Red Fox	Vulpes fulva	r/forest to open country
Gray Fox	Urocyon cinereoargenteus	u/open woodlands river bottoms

Common Name	Scientific Name	Abundance/Habitat Preference
Bears	Ursidae	
Black bear	Ursus americanus	u/remote mountainous areas, forests
Raccoons & Ringtails	Procyonidae	
Raccoon	Procyon lotor	c/along heavily wooded streams or lakesides
Weasels, Skunks Badgers, etc.	Mustelidae	
Marten	Martes americana	r/Fir & Spruce forests
Long-tailed weasel	Mustela frenata	u/all terrestrial habitats
Mink	Mustela vison	u/riparian woodlands
Badger	Taxidea taxus	u/open grasslands, foothills, deserts
Spotted skunk	Spilogale putorius	r/brushlands or open woods near water
Striped skunk	Mephitis mephitis	c/farmland, brushland
Cats	Fedidae	
Mountain lion	Felis concolor	u/remote mountains and forests
Bobcat	Lynx rufus	u/rimrocks and brushlands, forest, riparian woodlands
EVEN-TOED UNGULATES	ARTIODACTYLA	
Deer and Allies	Cervidae	
Mule deer	Odocoileus hemionus	c/open forests and brushland
Elk	Cervus canadensis	c/open forests and mountain meadows
Pronghorn Antelope	Antilocapridae	
Pronghorn	Antilocapra americana	c/mixed grassland and shrubland
Cattle, Sheep & Goats	Bovidae	
Bighorn sheep	Ovis canadensis	c/open mountain slopes

Common Name	Scientific Name	Abundance/Status/ Habitat Preference
DUCKS & GEESE	ANSERIFORMES	
Canada goose	Branta canadensis	u/R*/lakes, streams, marshes
Mallard	Anas platyrhyrchos	c/R*/lakes, streams, marshes
Pintail	Anas acuta	u/R*/lakes, streams, marshes
Gadwall	Anas strepera	u/S*/lakes, streams, marshes
Blue-winged teal	Anas discors	u/S*/lakes, streams, marshes
Green-winged teal	Anas carolinensis	c/R*/lakes, streams, marshes
Cinnamon teal	Anas cyanoptera	u/S*/lakes, streams, marshes
American wigeon	Mareca americana	r/S*/lakes, streams, marshes
Northern shoveler	Spatula clypeata	r/S*/lakes, streams, marshes
Common goldeneye	Bucephala clangula	u/M /marshes, lakes, rivers
Bufflehead	Bucephala albeola	u/M /marshes, lakes, rivers
Common merganser	Mergus merganser	u/M /marshes, lakes, rivers
EAGLES, HAWKS, FALCONS, and VULTURES	FALCONIFORMES	
Family: Cathartidae		
Turkey vulture	Cathartes aura	u/S*/throughout
Family: Accipitridae		
Goshawk	Accipter gentilis	u/R*/forests & woodlands
Sharp-shinned hawk	Accipter striatus	u/M /forests & woodlands

Common Name	Scientific Name	Abundance/Status/ Habitat Preference
Cooper's hawk	Accipter cooperii	u/R*/broken woodlands and canyons
Marsh hawk	Circus cyaneus	u/R*/marshes, fields, brushlands
Rough-legged hawk	Buteo lagopus	c/W /open rangelands
Ferruginous hawk	Buteo regalis	r/R*/open rangelands
Red-tailed hawk	Buteo jamaicensis	u/R*/area wide
Swainson's hawk	Buteo swainsoni	u/S*/dry plains-open rangelands
Golden eagle	Aquila chrysaetos	c/R*/open rangelands and foothills
Bald eagle	Haliaeetus leucocephalus	u/W /streams and open rangelands
Family Falconidae		
Peregrine falcon	Falco peregrinus **	r/R /open country
Prairie falcon	Falco mexicanus	u/R*/open rangelands and plains
Merlin (pigeon hawk)	Falco columbarius	r/M /open woodlands, prairies
American kestrel (sparrow hawk)	Falco sparverius	c/R*/open brushland and prairies
GALLINACEOUS BIRDS	GALLIFORMES	
Family: Tetraonidae		
Blue grouse	Dendragapus obscurus	u/R*/Aspen & coniferous forests
HERONS, BITTERNS, AND ALLIES	CICONIFORMES	
Family: Ardeidae		
Snowy egret	Leucophoyx thula	u/S /marshes, ponds, streams
Great blue heron	Ardea herodias	u/S /marshes, ponds, streams
Black-crowned night heron	Nycticorax nycticorax	u/S /marshes, ponds, streams

** - Endangered Species - No recent nesting records on NRL.

Common Name	Scientific Name	Abundance/Status/ Habitat Preference
American bittern	Botaurus lentiginosus	r/S /marshes
CRANES, RAILS AND ALLIES	GRUIFORMES	
Family: Gruidae - Cranes		
Sandhill crane	Grus canadensis	u/M /prairies, meadows, margins
Family: Rallidae		
Virginia rail	Rallus limicola	r/S*/marshes
Sora	Porzana carolina	u/S*/marshes, wet meadows
SHOREBIRDS AND GULLS	CHARADRIIFORMES	
Family: Charadriidae - Plovers		
Killdeer	Charadrius vociferus	c/R*/farmlands, gravel shores, riverbanks
Family: Scolopacidae		
Long-billed curlew	Numenius americanus	r/M /wet meadows, marshes
Solitary sandpiper	Tringa solitario	u/M /marshes and stream-sides
Spotted sandpiper	Actitis macularia	u/S*/Pond shores, streamsides
Common snipe	Capella gallinago	u/R*/wet meadows, streamsides
Family: Phalaropidae		
Wilson's phalaerope	Steganopus tricolor	u/S*/wet meadows, marshes
PIGEONS AND DOVES	COLUMBIFORMES	
Family: Columbidae		
Band-tailed pigeon	Columba fasciata	u/S*/pine forests, grain fields, open foothills
Rock Dove	Columba livia	c/R*/farms, cities-near buildings

Common Name	Scientific Name	Abundance/Status/ Habitat Preference
Mourning Dove	Zenaidura macroura	a/R*/area wide
CUCKOOS AND ROADRUNNERS	CUCULIFORMES	
Family: Cuculidae		
Roadrunner	Geococcyx californianus	r/R /Dry brushlands, open pinon-juniper
OWLS	STRIGIFORMES	
Family: Tytonidae		
Barn owl	Tyto alba	u/R*/riparian woodlands, farms
Family: Strigidae		
Screech owl	Otus asio	r/R*/woodlands
Great horned owl	Bubo virginianus	c/R*/area wide
Long-eared owl	Asio otus	u/R*/riparian woodlands and forests
Short-eared owl	Asio flammeus	u/R*/prairies and brushlands
Burrowing owl	Speoptyto cunicularia	u/S*/open grass and brushlands
Saw-whet owl	Aegolius acadicus	r/R*/coniferous forests
Flammulated owl	Otus flammeolus	r/R*/open pine forests
Pygmy owl	Glaucidium gnoma	r/R*/open coniferous forests
NIGHTHAWKS AND POOR-WILLS	CAPRIMULGIFORMES	
Family: Caprimulgidae		
Common nighthawk	Cordeiles minor	c/S*/area wide
Poor-will	Phalaenoptilus nuttalli	u/S*/open pinon-juniper
HUMMINGBIRDS AND SWIFTS	APODIFORMES	
Family: Apodidae		
Black Swift	Cypseloides niger	r/S /open sky of mountain country, cliffs

Common Name	Scientific Name	Abundance/Status/ Habitat Preference
White-throated swift	Aeronautes saxatalis	u/S*/open sky, cliffs
Family: Trochilidae		
Broad-tailed hummingbird	Selasphorus platycercus	c/S*/high meadows, willows
Calliope hummingbird	Stellula calliope	u/S*/high mountains, flowered meadows
Rufous hummingbird	Selasphorus rufus	c/M /forest edges
KINGFISHERS	CORACIIFORMES	
Family: Alcedinidae		
Belted kingfisher	Megaceryle alcyon	u/S*/along rivers, ponds, lakes
WOODPECKERS	PICIFORMES	
Family: Picidae		
Common flicker	Colaptes sp.	c/R*/forests, riparian woodlands, pinon-juniper
Lewis' woodpecker	Asyndesmus lewis	u/S*/open forests
Yellow-bellied sapsucker	Sphyrapicus varius	c/S*/woodlands, orchards
Williamson's sapsucker	Sphyrapicus thyroideus	u/S*/coniferous forests
Hairy woodpecker	Dendrocopos villosus	u/R*/riparian woodlands, mountain forests
Downy woodpecker	Dendrocopos pubescens	c/R*/riparian woodlands, forests
Northern three-toed	Piciodes Tridactylus	r/R*/coniferous forests
PERCHING BIRDS	PASSERIFORMES	
Family: Tyrannidae		
Western kingbird	Tyrannus verticalis	u/S*/open country, riparian woodland
Say's phoebe	Sayornis saya	c/S*/prairies and open brushlands
Hammond's flycatcher	Empidonax hammondii	r/S / high coniferous forests

Common Name	Scientific Name	Abundance/Status/ Habitat Preference
Dusky flycatcher	Empidonax oberholseri	r/S /Pinon-juniper
Western flycatcher	Empidonax difficilis	u/S*/moist, shaded woodlands
Western wood pewee	Contopus sordidulus	u/S*/riparian woodlands open conifers
Olive-sided flycatcher	Nuttallornis borealis	u/S*/coniferous forests
Family: Alaudidae		
Horned lark	Eremophila alpestris	a/R*/plains and open brushlands
Family: Hirundinidae		
Barn swallow	Hirundo rustica	c/S*/marshes, fields, usually near habitation
Cliff swallow	Petrocheiidon pyrrhonota	c/S*/open land near cliffs and water
Violet-green swallow	Tachycineta thalassina	c/S*/wooded foothills and mountains
Tree swallow	Iridoprocne bicolor	c/S*/open country near water
Bank swallow	Riparia riparia	u/S*/stream and river banks
Rough-winged swallow	Stelgidopteryx ruficollis	u/S*/near streams and lakes
Family: Corvidae		
Stellar's Jay	Cyanocitta stellari	c/R*/coniferous forests
Scrub jay	Aphelocoma coerulescens	u/R*/pinon-juniper brushland
Pinyon jay	Gymnorhinus cyanocephalus	c/R*/pinon-juniper
Gray jay	Perisoreus canadensis	c/R*/coniferous forests
Black-billed magpie	Pica pica	a/R*/brushlands, riparian woodlands
Clark's nutcracker	Nucifraga columbiana	c/R*/high coniferous forests
Common raven	Corvus corax	c/R*/area wide
Common crow	Corvus brachyrhynochos	u/R*/farmlands, brush-lands, riparian woodlands

Common Name	Scientific Name	Abundance/Status/ Habitat Preference
Family: Paradae		
Black-capped chickadee	Parus atricapillus	u/R*/mixed and deciduous woodlands
Mountain chickadee	Parus gambeli	c/R*/coniferous forests
Plain titmouse	Parus inornatus	u/R*/pinon-juniper, riparian woods
Bushtit	Psaltriparus minimus	u/R*/pinon-juniper
Family: Cinclidae		
Dipper	Cinclus mexicanus	u/R*/fast flowing mountain streams
Family: Sittidae		
White-breasted nuthatch	Sitta carolinensis	u/R*/riparian woods, mixed forests
Red-breasted nuthatch	Sitta canadensis	r/R*/coniferous forests
Pygmy nuthatch	Sitta pygmaea	u/R*/pine and douglas fir forests
Family: Certhiidae		
Brown creeper	Certhia familiaris	u/R*/forests and woodlands
Family: Troglodytidae		
House wren	Troglodytes aedon	u/S*/brushlands and open woodlands
Bewick's wren	Thyromanes bewickii	u/S*/brushlands and pinon-juniper
Rock wren	Salpinctes obsoletus	c/S*/talus slopes, cliffs
Canyon wren	Catherpes mexicanus	r/S*/rocky canyons, cliffs
Family: Mimidae		
Mockingbird	Mimus polyglottos	u/S*/riparian woodlands roadsides
Catbird	Dumetella carolinensis	u/S*/dense brushlands

Common Name	Scientific Name	Abundance/Status/ Habitat Preference
Sage Thrasher	Oreoscoptes montanus	c/S*/desert brushlands
Family: Turdidae		
American robin	Turdus migratorius	c/S*/open woodlands, farmlands, streamsides
Townsend's solitaire	Myadestes townsendi	c/R*/mixed forest
Hermit thrush	Hylochichla guttata	u/S*/coniferous or mixed forest
Swainson's thrush	Hylochichla ustulata	u/S*/Aspens, coniferous forests, streamsides
Veery	Hylochichla fuscescens	r/S*/riparian woodlands
Western bluebird	Sialia mexicana	u/S*/scattered woodlands
Mountain bluebird	Sialia currucoides	a/S*/open brush and grassland
Family: Sylviidae		
Blue-gray gnatcatcher	Pilioptila caerulea	u/S*/pinon-juniper riparian woods
Golden-crowned kinglet	Regulus satrapa	r/R*/coniferous forest
Ruby-crowned kinglet	Regulus calendula	u/R*/coniferous forest
Family: Motacillidae		
Water pipit	Anthus spinoletta	u/R*/wet meadows, plains, bare fields
Family: Bombycillidae		
Bohemian waxwing	Bombycilla garrula	u/W / boreal forests
Cedar waxwing	Bombycilla cedrorum	u/W / open woodlands
Family: Laniidae		
Northern shrike	Lanius excubitor	u/W /brushlands, forests
Loggerhead shrike	Lanius ludovicianus	c/S*/scattered woodlands, brushlands

Common Name	Scientific Name	Abundance/Status/ Habitat Preference
Family: Sturnidae		
Starling	Sturnus vulgaris	c/R*/near habitation
Family: Vireonidae		
Solitary vireo	Vireo solitarius	r/M / mixed forests
Warbling vireo	Vireo gilvus	u/S*/mixed woodlands
Family: Parulidae		
Orange-crowned warbler	Vermivora celata	u/M /Brush woodlands
Virginia's warbler	Vermivora virginiae	u/M /pinons, brush slopes
Yellow warbler	Dendroica petechia	c/S*/willows, riparian woodlands
Yellow-rumped warbler (Audubon's)	Dendroica sp.	c/M /coniferous forests
Townsend's warbler	Dendroica townsendi	r/M /moist coniferous forests
Black-throated gray warbler	Dendroica nigrescens	u/S*/dry pinon-juniper slopes
Common yellow throat	Geothylypis trichas	c/S*/thickets, streamsides, marshes
Yellow-breasted chat	Icteria virens	r/S*/riparian woodlands
Northern waterthrush	Seiurus noveboracensis	r/M /wooded lake or stream shores
McGillivray's warbler	Oporornis tolmiei	u/S*/riparian thickets
Wilson's warbler	Wilsonia pusilla	u/S*/riparian thickets
Family: Ploceidae		
House sparrow	Passer domesticus	c/R*/near habitation
Family: Icteridae		
Bobolink	Dolichonyx oryzivorus	r/S /Hay meadows, marshes
Western meadow lark	Sturnella neglecta	a/R*/open fields and rangelands
Yellow-headed blackbird	Xanthocephalus xanthocephalus	c/S*/marshes, wet meadows

Common Name	Scientific Name	Abundance/Status/ Habitat Preference
Red-winged blackbird	Agelaius phoeniceus	c/R*/marshes, wet meadows
Brewer's blackbird	Euphagus cyanocephalus	c/S*/open grasslands, farmlands
Brown-headed cowbird	Molothrus ater	u/S*/barnyards, fields, woodland edges
Northern oriole	Icterus sp.	u/S*/Riparian woodlands
Family: Thraupidae		
Western tanager	Piranga ludoviciana	u/S*/ open woodlands
Summer tanager	Piranga rubra	r/M /riparian woodlands
Family: Fringillidae		
Black-headed grosbeak	Pheucticus melanocephalus	u/S*/mixed forest
Evening grosbeak	Hesperiphona vespertina	u/M /coniferous forests
Blue grosbeak	Guiraca caerulea	r/M /riparian thickets
Cassin's finch	Carpodacus cassinii	r/R /open coniferous forests
House finch	Carpodacus mexicanus	c/R*/open woodlands, buildings
Pine grosbeak	Pinicola enucleator	u/R*/coniferous forests
Gray-crowned rosy finch	Leucosticte tephrocotis	r/W /throughout area in winter
Brown-capped rosy finch	Leucosticte austrailis	u/R /thoughout area in winter
Pine siskin	Spinus pinus	u/R*/conifer forests, weedy areas
American goldfinch	Spinus tristis	u/R*/Roadsides, weed-patches, riparian woodlands
Red crossbill	Loxia curvirostra	u/R*/coniferous forests
Green-tailed towhee	Chlorura chlorura	c/R*/brushlands, pinon-juniper
Rufous-sided towhee	Pipilo erythrophthalmus	c/R*/forest edges, brushlands
Brown towhee	Pipilo fuscus	r/M /pinon-juniper

Common Name	Scientific Name	Abundance/Status/ Habitat Preference
Savannah sparrow	Passerculus sandwichensis	c/S*/meadows, marshes, prairies
Lark bunting	Calamospiza melanocorys	u/M /prairies and brushlands
Vesper sparrow	Pooecetes gramineus	c/S*/open brushlands, fields
Lark sparrow	Chondestes grammacus	u/S*/open brushlands
Sage sparrow	Amphispiza belli	c/S*/greasewood and sagebrush
Dark-eyed junco	Junco sp.	c/R*/coniferous forests, riparian woodlands, mixed woodlands
Gray-headed junco	Junco caniceps	c/R*/forests
Tree sparrow	Spizella arborea	u/W /willow thickets and weedy areas
Chipping sparrow	Spizella passerina	u/S*/open woodlands
Brewer's sparrow	Spizella breweri	c/S*/brushlands, weeds
White-crowned sparrow	Zonotrichia leucophrys	c/R*/road sides, brushlands, pinon-juniper
Lincoln's sparrow	Melospiza lincolnii	u/S*/willow thickets
Song sparrow	Melospiza melodia	c/R*/marshes, riparian woodlands

PLANT SPECIES LIST

TRICKLE MOUNTAIN AREA

Grasses and Grasslike Plants

Genus/species	Common Name
Agropyron bakeri	Baker wheatgrass
A. desertorum	Crested wheatgrass
A. pseudorepens	False quackgrass
A. smithii	Western wheatgrass
A. s. palmeri	" " "
A. subsecundum	Bearded wheatgrass
A. trachycaulum	Slender wheatgrass
Agrostis scabra	Rough bent
Aristida fendleriana	Fendler three-awn
Blepharoneuron tricholepis	Pine dropseed
Bouteloua gracilis	Blue grama
Bromus anomalus	Nodding brome
B. ciliatus	Fringed brome
B. pumpellianus	Pumpelly brome
Carex chalciolepis	
C. ebenea	Ebony sedge
C. elynoides	Blackroot sedge
C. microptera	Smallwing sedge
C. obtusata	Obtuse sedge
C. praegracilis	Fieldclustered sedge
C. siccata	Silverton sedge

Genus/species	Common Name
Dactylis glomerata	Orchard grass
Danthonia parryi	Parry oatgrass
Deschampsia caespitosa	Tufted hairgrass
Distichlis stricta	Inland saltgrass
Festuca arizonica	Arizona fescue
F. idahoensis	Idaho fescue
F. ovina	Sheep fescue
F. o. brachyphylla	Alpine fescue
F. thurberi	Thurber fescue
Helictotrichon hookeri	Spike oat
Hordeum brachyantherum	Meadow barley
H. jubatum	Foxtail barley
Juncus drummondii	Drummond rush
Koeleria cristata	Prairie junegrass
Muhlenbergia filiculmis	Slimstem muhly
M. montana	Mountain muhly
M. richardsonis	Mat muhly
M. torreyi	Ring muhly
M. wrightii	Spike muhly
Oryzopsis hymenoides	Indian ricegrass
Phleum alpinum	Alpine timothy
P. pratense	Timothy
Poa compressa	Canada bluegrass
P. epilis	Skyline bluegrass
P. fendleriana	Mutton grass

Genus/species	Common Name
P. nervosa	Wheeler bluegrass
P. pratensis	Kentucky bluegrass
P. reflexa	Nodding bluegrass
P. rupicola	Timberline bluegrass
P. secunda	Sandberg bluegrass
Sitanion hystrix	Bottlebrush squirreltail
Sporobolus cryptandrus	Sand dropseed
Stipa comata	Needle-and-thread
S. lettermani	Letterman needlegrass
S. pinetorum	Pinewoods needlegrass
S. scribneri	Scribner needlegrass
Trisetum spicatum	Spike trisetum

Forbs

Genus/species	Common name
Achillea lamulosa	Western yarrow
Agoseris aurantiaca	Orange agoseris
A. glauca	Pale agoseris
A. g. parviflora	
Allium cernuum	Nodding onion
Amaranthus retroflexus	Rough pigweed
Anaphalis margaritacea	Common pearly everlasting
Androsace septentrionalis glandulosa	Pygmyflower rockjasmine
Anemone globosa	Globe anemone
Angelica grayi	Grays angelica
Antennaria parvifolia	Small leaf pussytoes
A. rosea	Rose pussytoes
Aquilegia caerulea	Colorado columbine
Arabis demissa languida	Rockcress
A. divaricarpa	Spreading pod rockcress
A. drummondi	Drummond rockcress
Arenaria fendleri	Fendler sandwort
A. obtusiloba	Twinflower sandwort
Arnica cordifolia	Heartleaf arnica
A. mollis	Hairy arnica
Artemisia dracunculus glauca	Tarragon sagewort
A. norvegica	Sagewort
A. pacifica	Sagewort
A. spithamaca	Sagewort

Genus/species	Common name
Asclepias hallii	Hall milkweed
Aster bigelovii	Bigelow tansyaster
A. leucanthemifolius	Daisy leaf tansyaster
A. rubrotinctus	Red aster
Astragalus agrestis	Field milkvetch
A. alpinus	Alpine milkvetch
A. hallii	Halls milkvetch
Bahia dissecta	Ragleaf bahia
Besseya alpina	Alpine kittentails
Calochortus gunnisonii	Gunnison mariposa lily
Caltha leptosepala	Elkslip marsh marigold
Campanula parryi	Parry bellflower
C. rotundifolia	Bluebell bellflower
Castilleja integra	Wholeleaf Indian paintbrush
C. linariaefolia	Wyoming Indian paintbrush
C. occidentalis	Western Indian paintbrush
Cerastium beeringianum	Bering cerastium
Chaenactis douglasii	Douglas dustymaiden
Chamaerodos nuttallii	
Chenopodium beriandieri	Pitseed goosefoot
C. leptophyllum	Narrowleaf goosefoot
Cirsium foliosum (drummondii)	Elk thistle
C. pallidum	Pale thistle
Cleome serrulata	Rocky Mountain beeplant
Conyza canadensis	Canada horseweed
Corydalis aurea	Golden corydalis

Genus/species	Common name
Cryptantha virgata	Cryptantha
Delphinium alpestre	Alpine larkspur
D. barbeyi	Barbey larkspur
Descurainia obtusa	Tansy mustard
Dodecatheon pulchellum	Shooting star
Draba aurea	Golden draba
D. crassifolia	Rocky Mountain draba
Echinocereus triglochidiatus	Echinocereus
Epilobium angustifolium	Fireweed willowherb
E. minutum	Small willowherb
Erigeron canus	Hoary fleabane
E. compositus glabratus	Fernleaf fleabane
E. divergens cinereous	Spreading fleabane
E. elatior	Tall fleabane
E. leiomeris	Yellow fleabane
E. lonchophyllus	Spearleaf fleabane
E. subtrinervis	Threenerve fleabane
E. vetensis	
Eriogonum alatum	Wing wild buckwheat
E. flavum	Yellow buckwheat
E. umbellatum	Sulfur buckwheat
Eritrichium elongatum	
Erysimum asperum	Plains wallflower
E. nivale	Snow wallflower
E. wheeleri	Wheeler wallflower

Genus/species	Common name
Euphorbia spp.	Spurge, snow-on-the-mountain
Fragaria vesca americana	Wild strawberry
Galium boreale	Northern bedstraw
Gentiana fremontii	Fremont gentian
G. plebeia	Newworld annual gentian
G. prostrata americana	Creeping gentian
G. tenella	
Geranium fremontii	Fremont geranium
Geum turbinatum	Avens
Gilia aggregata	Skyrocket gilia
Haplopappus spinulosus	Ironplant goldenweed
Hedeoma spp.	False pennyroyal
Helianthella parryi	Parry hilianthella
Helianthus petiolaris	Prairie sunflower
Heterotheca villosa	Telegraphplant
Heuchera parvifolia	Little leaf alumroot
Hymenoxys acaulis	Stemless actinea
H. grandiflora	Graylocks actinea
H. richardsonii	Pingue actinea
Hyoscyamus niger	Black henbane
Iris missouriensis	Rocky Mountain iris
Ivesia gordonii	Gordon ivesia
Lappula redowskii	Bluebur stickseed
Lepidium montanum	Mountain pepperweed
Lesquerella montana	Mountain bladderpod

Genus/species	Common name
Lewisia pygmaea	Least lewisia
Linum lewisii	Lewis flax
Lithospermum incisum	Narrowleaf gromwell
Lloydia serotina	
Lupinus argenteus	Silvery lupine
L. caespitosus	Stemless lupine
Luzula multiflora	Manyflowered woodrush
Lychnis drummondii	Drummond campion
Mammillaria vivipara	Purple mammillaria
Mentzella laciniata	Mentzella
Mertensia ciliata	Mountain bluebells
M. lanceolata	Lanceleaf bluebells
Mimulus guttatus	Common monkeyflower
Mirabilis linearis	Narrowleaf four o'clock
Moneses uniflora	Common woodnymph
Oenothera caespitosa	Tufted evening primrose
O. coronopifolia	
Opuntia schweriniana	
Oreoxis alpina	
Orthocarpus luteus	Yellow owl clover
Oxyria digyna	Alpine mountain sorrel
Oxytropis deflexa	Dropped loco
O. lamberti	Lambert loco
O. sericea	Silky loco
O. viscida	Yellowhair loco

Genus/species	Common name
Paronychia sessiliflora	Nailwort
Paspalum stramineum	Sand paspalum
Pedicularis parryi	Parry lousewort
Penstemon barbatus torreyi	Torrey beardlip penstemon
P. caespitosus	Mat penstemon
P. hallii	Halls penstemon
P. secundiflorus	Sidebells penstemon
P. strictus	Rocky Mountain penstemon
P. teucrioides	Germander penstemon
P. virens	Green penstemon
P. whippleanus	Whipple penstemon
P. spp.	Penstemon
Pericome caudata	
Phacelia heterophylla	Varileaf phacelia
P. neomexicana	New Mexico phacelia
P. sericea	Silky phacelia
Phlox caespitosa	Tufted phlox
Plantago major	Common plantain
Polemonium delicatum	
P. viscosum	Sticky polemonium
Polygonum bistortoides	American bistort knotweed
Potentilla anserina	Silverweed cinquefoil
P. concinna	Elegant cinquefoil
P. diversifolia	Blueleaf cinquefoil.
P. quinquefolia	

Genus/species	Common name
Primula angustifolia	Colorado primrose
Pseudo cymopterus montanus	False spring parsley
Pulsatilla ludoviciana	
Pyrola virens	Green pyrola
Ranunculus inamoenus	Buttercup
Rumex spp.	Dock
Salsola kali tenuiflora	Tumbleweed, Russian thistle
Saxifraga rhomboidea	Diamond leaf saxifrage
Sedum integrifolium	
S. rhodanthum	Rosecrown stonecrop
S. stenopetalum	Wormleaf stonecrop
Senecio amplectans	Showy alpine groundsel
S. atratus	Black groundsel
S. bigelovii	Bigelow groundsel
S. canus	Woolly groundsel
S. crassulus	Thickleaf groundsel
S. fendleri	Fendler groundsel
S. fendleri lanatus	
S. fremontii blitoides	Fremont groundsel
S. integerrimus exaltatus	Lambstonge groundsel
S. mutabilis	
S. plattensis	Prairie groundsel
S. soldanella	
S. spartioides	Broom groundsel
S. taraxacoides	

Genus/species	Common name
S. werneriaefolius incertus	
Sibbaldia procumbens	
Sidalcea neomexicana	New Mexico checker mallow
Silene acaylis	Moss silene
S. sculeri	Seouler silene
Smilacina stellata	Starry false solomon seal
Solidago decumbens	Decumbent goldenrod
S. missouriensis	Missouri goldenrod
Sphaeralcea coccinea	Scarlet globemallow
Stellaria longpipes laeta	Longstalk starwort
Stephanomeria pauciflora	Wire lettuce
Suaeda nigra	Black seepweed
Swertia perinnis	Alpine bog swertia
S. radiata	
Taraxacum officinale	Common dandelion
Thalictrum spp.	Meadowrue
Thalespi alpestre	Alpine pennycress
Thermopsis divaricarpa	
Townsendia sericea	Townsendia
Trifolium dasyphyllum	Whiproot clover
T. fendleri	Fendler clover
T. longipes	Longstalk clover
T. parryi	Parry clover
Valeriana edulis	Edible valerian
Veronica serphyllifolia	Thymeleaf speedwell

Genus/species	Common name
Viguiera multiflora	Showy goldeneye
Viola nephrophylla	Northern bog violet
Woodsia oregana	Oregon woodsia
Zigadenus elegans	Mountain death camus

Shrubs

Genus/species	Common name
Arctostaphylos uva-ursi	Bearberry (kinnikinnick)
Artemisia caruthi	Curruth sagewort
A. frigida	Fringed sagewort
A. tridentata tridentata	Basin big sagebrush
Atriplex canescens	Fourwing saltbush
Berberis repens	Creeping barberry
Ceanothus fendleri	Fendler ceanothus
Cercocarpus montanus	True mountain mahogany
Chrysothamnus nauseosus	Rubber rabbitbrush
C. n. pinnifolius	
C. n. speciosus	
C. parryi	Parry rabbitbrush
C. p. attenuatus	
C. p. howardii	
C. viscidiflorus	Douglas rabbitbrush
Clematis pseudoalpina	Rocky Mountain clematis
Dryas octopetala	Eight petal dryad
Eurotia lanata	Winterfat
Gutierrezia sarothrae	Broom snakeweed
Holodiscus dumosus	Bush rock spirea
Jamesia americana	Cliff jamesia
Leptodactylon pungens	Granite prickly gilia
Lonicera involucrata	Bearberry honeysuckle

Genus/species	Common name
Potentilla fruticosa	Shrubby cinquifoil
Prunus virginiana	Common chokecherry
Quercus gambeli	Gambel oak
Rhus trilobata	Skunkbush sumac
Ribes cereum	Was currant
R. inerme	Whitesten currant
Rosa woodsii	Woods rose
Rubus strigosus	American red raspberry
Salix anglorum antiplasta	Northland willow
S. geveriana	
S. glauca glabrescens	Grayleaf willow
S. nivalis saximontana	Snow willow
Sambucus pubens	Scarlet elder
Sarcobatus vermiculatus	Black greesewood
Shepherdia canadensis	Russet Buffalo berry
Symphoricarpos palmeri	
Tetradymia canescens	Gray horsebrush
Yucca glauca	Small soapweed

Trees

Genus/species	Common name
Alnus tenuifolia	Thinleaf alder
Juniperus communis saxatilis	Mountain common juniper
J. scopulorum	Rocky Mountain juniper
Pinus aristata	Bristlecone pine
P. contorta	Lodgepole pine
P. edulis	Pinyon pine
P. ponderosa	Ponderosa pine
Populus tremuloides	Quaking aspen
Pseudotsuga menziesii	Douglas fir

APPENDIX B

Minerals Report

Form 3980-1
(September 1970)
(formerly 3820-1)

Serial Number

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

State COLORADO

MINERAL REPORT

MINERALS EVALUATION OF THE PROPOSED TRICKLE MOUNTAIN WITHDRAWAL

Lands Involved

All of T. 46 N., R. 5 E., New Mexico P.M.
All of T. 46 N., R. 6 E., New Mexico P.M.
All of T. 45 N., R. 5 E., New Mexico P.M.
All of T. 45 N., R. 6 E., New Mexico P.M.
All of T. 47 N., R. 6 E., New Mexico P.M.
T. 44 N., R. 4 E., N.M.P.M., Sec. 1-4, 9-16
T. 44 N., R. 5 E., N.M.P.M., Sec. 6, 7
T. 45 N., R. 4 E., N.M.P.M., Sec. 1, 12, 13, 24, 25, 26, 35, 36
T. 46 N., R. 4 E., N.M.P.M., Sec. 1-4, 8-17, 20-36
T. 47 N., R. 4 E., N.M.P.M., Sec. 22-27, 34-36
T. 47 N., R. 5 E., N.M.P.M., Sec. 19, 30-36
T. 47 N., R. 7 E., N.M.P.M., Sec. 4-9, 16-21, 28-33

Containing approximately 80,000 acres of BLM Land and 80,000 acres of USFS land.

March 23, 1977
(Date)

By

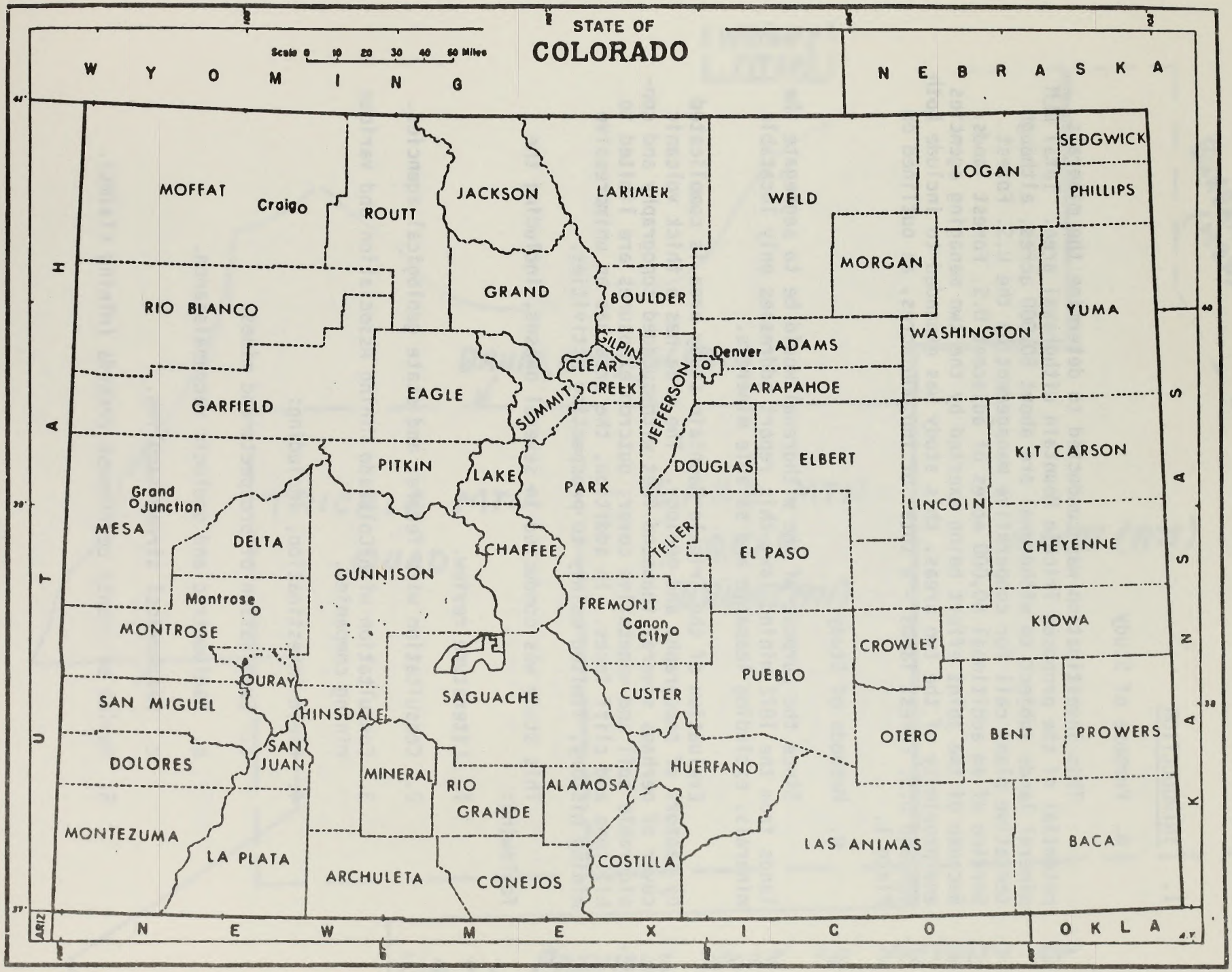
Richard P. Huebschman
Geologist

Technical Review 4/6/77
H. R. McGinn
Chief, Branch of Energy & Minerals

Richard P. Huebschman

Management Review
R. W. McCloery

GPO 830-392



TRICKLE MTN. HMP

BLM
USFS

I. INTRODUCTION

A. Purpose of Study

This investigation was conducted to determine the minerals potential of the proposed Trickle Mountain withdrawal area. Total BLM mineral lands subject to withdrawal are about 80,000 acres, although tentative plans call for cooperative management by the U.S. Forest Service of an additional 80,000 acres of adjacent U.S. Forest lands. Because of the joint effort being exerted by the two managing agencies and proximity of the two areas, this study was expanded to include both BLM and U.S. Forest lands - a total of 160,000 acres, as outlined on Plate I.

B. Methods of Study

Since the purpose of the withdrawal would be to segregate the lands from the 1872 mining law, this report addresses only locatable minerals, excluding leasable and salable minerals.

Evaluation of the Trickle Mountain study area is complicated by factors of topography and geology. The area has a thick volcanic cover of perhaps several thousand feet with subdued topography and considerable soil and vegetative cover; outcrop exposures are limited to hilltops and cliff faces. In addition, the area has an unimpressive mining history, limited mainly to prospecting activities.

This study was conducted in several phases, including the following:

1. Literature review.

2. Consultation with federal and state geological agencies.

3. Consultation with Colorado Mining Association and various mining companies.

4. Field investigation, including:

   a. Examination of prospects and mines.

   b. Radiometric and geologic reconnaissance.

   c. Geochemical stream sampling.

5. Review of county courthouse records (mining claims).

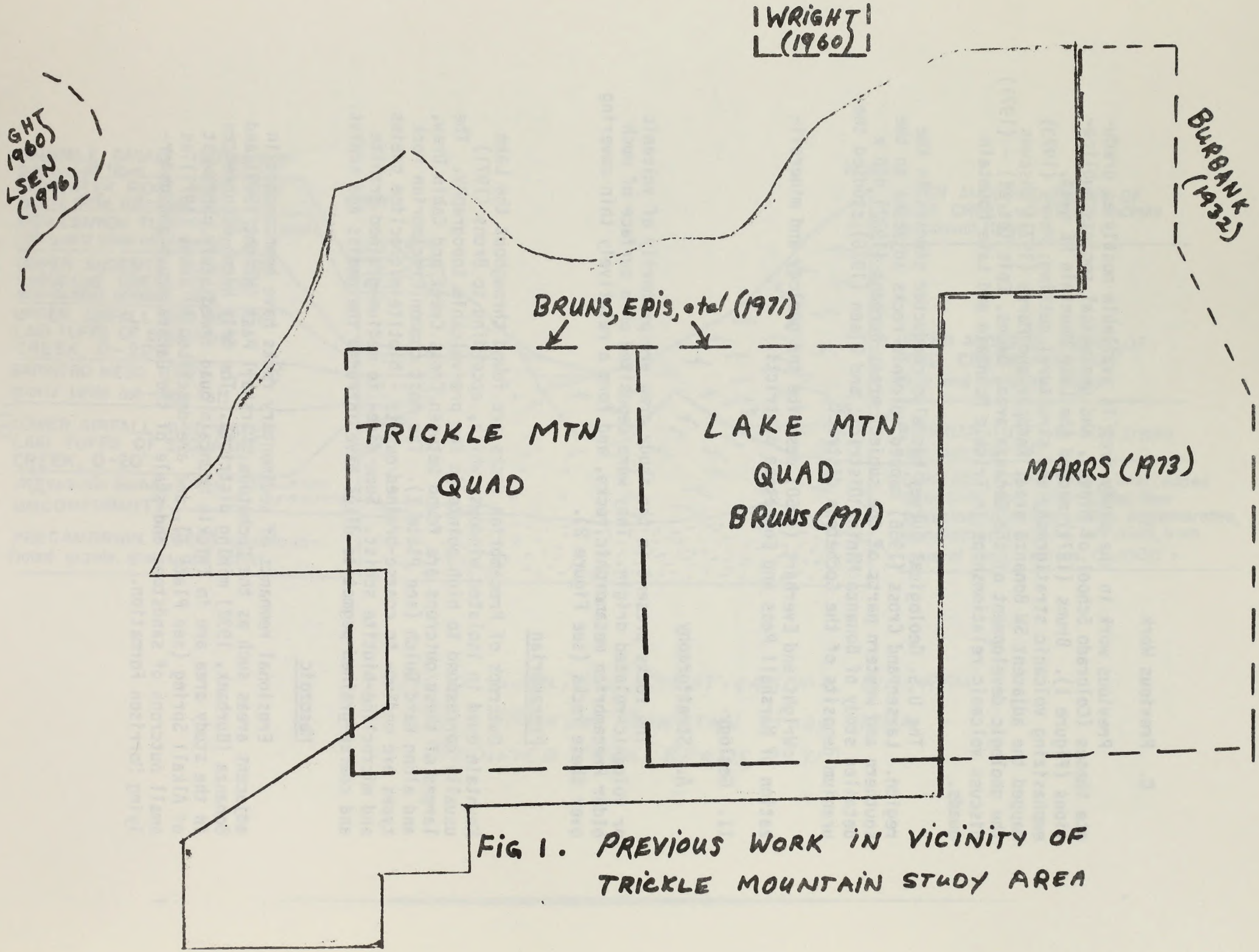


Fig 1. PREVIOUS WORK IN VICINITY OF TRICKLE MOUNTAIN STUDY AREA

C. Previous Work

Previous work in the study area is available mostly as graduate theses (Colorado School of Mines), and geological society publications (Figure I). Bruns (1971) mapped the Lake Mountain NE quad, emphasizing volcanic stratigraphy and structural setting; Marrs (1973) mapped the adjacent SW Bonanza area; Knepper and Marrs (1971) discuss the geologic development of the Bonanza area; Bruns, Epis (et al) - (1971) discuss volcanic relationships in Trickle Mountain and Lake Mountain quads.

The U.S. Geological Survey has also conducted studies in the region. Larsen and Cross (1956) mapped volcanic rocks adjacent to the southern and western parts of the subject area; Burbank (1932) did a detailed study of Bonanza Mining District; and Olsen (1976) studied the uranium deposits of the Cochetopa district.

Wright and Everhart (1960) describe the geology and mineralization of Marshall Pass and Cochetopa districts.

II. Geology

A. Stratigraphy

The rocks present in the study area are primarily of volcanic or volcanic-related origin. They were deposited on a surface of much older Precambrian metamorphic rocks, and form a relatively thin covering over these rocks (see Figure 2).

Precambrian

Outcrops of Precambrian rocks are found throughout the Lake Mountain quad in isolated windows, which, according to Bruns (1971) usually correspond to high points in the pre-volcanic topography. The largest of these outcrops are found between Cross Creek and Cabin Draw, and along Ward Gulch (see Plate I). The most common Precambrian rock types are medium- to coarse-grained quartz - biotite-microcline gneiss and microcline-biotite schist. Some fine- to medium-grained granite and coarse-grained pegmatite dikes have intruded the gneiss and schist.

Mesozoic

Erosional remnants of sedimentary rocks have been mapped in adjacent areas such as the Cochetopa, Marshall Pass (Wright, 1960) and Bonanza (Burbank, 1932) mining districts. The only known occurrences in the study area are in Trickle Mountain quad immediately northwest of Alkali Spring (see Plate I), and are described by Bruns (1971) as small outcrops of sandstone and shale of the Dakota group and underlying Morrison Formation.

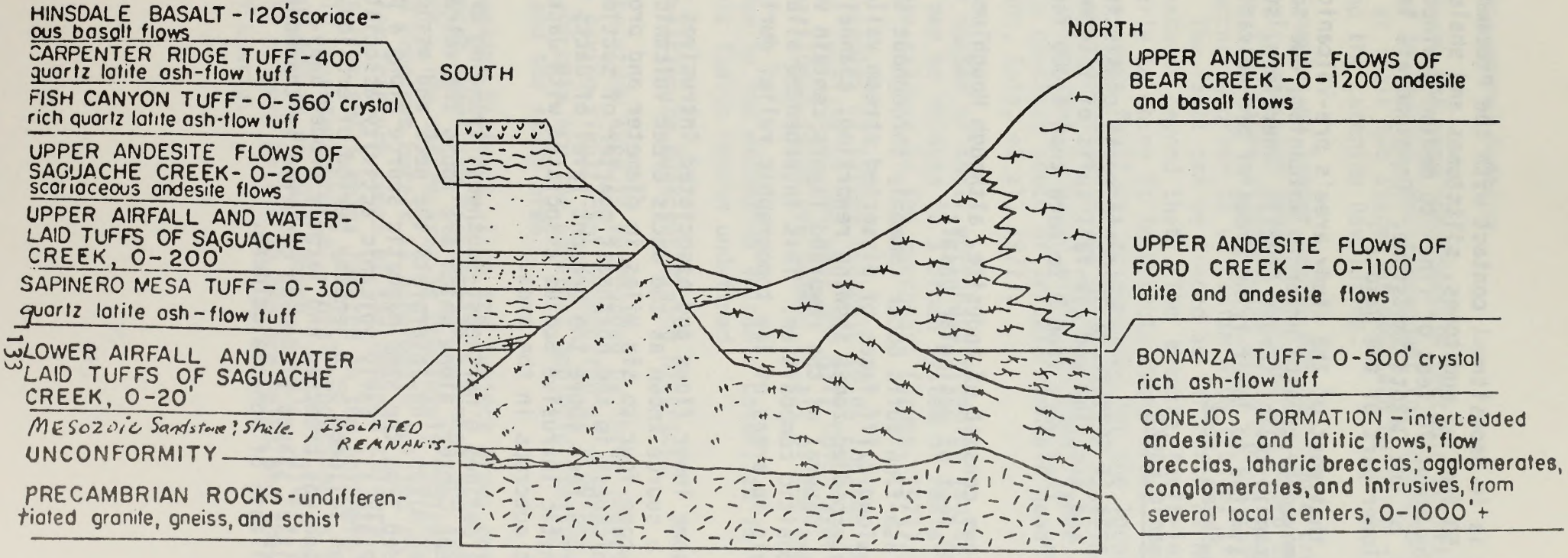


FIG 2. SIMPLIFIED STRATIGRAPHIC DIAGRAM OF TRICKLE MOUNTAIN STUDY AREA (MODIFIED FROM BRUNS, 1971)

The Morrison is in depositional contact with the Precambrian and consists of about 50 feet of mudstones, siltstones and shales. The Morrison is overlain by about 70 feet of fine- to medium-grained ferruginous quartzite of the Dakota Sandstone. Conglomerate layers are also reported in the lower part of the Dakota .

It is likely that most of the study area's pre-volcanic sedimentary rocks were removed by erosion prior to volcanism, due to relatively high topographic relief (Bruns (1971). Therefore, such occurrences would be limited to lower-lying areas of pre-volcanic topography, such as along Sheep Creek.

Tertiary Volcanic Rocks

Most of the area is covered by volcanic rocks consisting of lava flows, breccias, and ash flow and air-fall tuffs of intermediate to silicic composition. They vary from 0 to more than 4,000 feet total thickness.

Most lava flows consist of andesite, although Houghland Hill is capped by about 100 feet of vesicular basalt.

Airfall and ash-flow tuffs occur commonly throughout the area and are well exposed along cliff faces of dissected stream valleys. Some units contain interbedded zones showing reworking, channeling, and cross-stratification. Several of the reworked layers contain volcanic gravels mainly of andesitic composition. This interbedded alluvium indicates paleochannels in areas of low topographic relief during volcanism.

It appears some lower flows and associated intrusives were derived locally from a source known as the Jacks Creek Volcanic Center, which was a volcanic cone four to six miles in diameter and probably attained a maximum thickness in the northeast quarter of section 6, T. 45 N., R. 6E of 1,800 feet above the present level of Jacks Creek (Bruns, 1971). Trachytic intrusive bodies associated with Jacks Creek Center form prominent outcrops in the area.

Bruns (1971) defines a northeast-southwest trending arc through the Jacks Creek Center, along which are found the volcanic neck and several associated dikes. He interprets the neck and associated dikes as being intruded from the same magmatic source along a pre-volcanic fault (see Plate I). Early volcanic activity associated with Jacks Creek Center was followed by a lengthy period of erosion, during which the volcanic cone was breached and largely eroded away. Possibly during this time, initial stages of doming occurred in the Bonanza area, followed by later collapse of Bonanza caldera.

B. Structural Setting

There has been considerable tectonic activity within the study area, prior to, during, and subsequent to, volcanic activity. There have been at least two stages of mountain building - the ancestral Rockies and the Laramide Revolution.

Examples of larger faults are the Middle Creek fault and arcuate fault-intrusive zone in the east and Sheep Creek fault to the west (Plate I). Major displacement along Middle Creek fault lineament probably occurred prior to volcanism with little, if any, post-volcanic movement. The fault can be traced as far north as Marshall Pass, and probably extends beyond that. The arcuate fault-intrusive zone extends northeasterly to where it intersects Jacks Creek. It is probable that this pre-volcanic fault was responsible for the location of trachytic dikes and related volcanic and post-volcanic faulting. Several hundred feet of displacement occurred along the Sheep Creek fault zone, which is known to continue south of Trickle Mountain quad for more than seven miles (Bruns, Epis, et al, 1971).

A number of small northeast-trending faults in Lake Mountain N.E. quad may be related to a broad system of radial faults associated with Bonanza caldera to the northeast (Bruns, 1971).

Examples of larger tectonic folds include the northeast trending Sheep Creek syncline on the west and Mill Gulch syncline on the east. Small compactional folds are common in all of the ash flow sheets.

Due to the extensive volcanic cover, it is likely that some pre-volcanic faults remain undefined.

C. Relation to Adjacent Mining Districts

The study area is surrounded by three important mining districts (Plate I), having significant production of uranium, lead, zinc, silver, and gold. Of note are the apparent geologic similarities between these districts and the study area.

Bonanza District, like the subject area, contains a cover of volcanic rocks overlying Precambrian basement and remnants of sedimentary rock. The entire area is complexely faulted. Mineralization of base and precious metals is apparently related to intrusive activity along complex fracture zones of the Bonanza caldera. The major production was from small veins located in the northern part of the district near the old Bonanza townsite. Total production is estimated at more than $11,000,000 as of 1974 (Marsh, 1974). Silver, lead, gold, and zinc are the primary metals in the ore veins and they usually occur in a gangue of quartz.

According to Marrs (1973), surficial distribution of altered and mineralized zones appears to be entirely controlled by the fracture pattern of Bonanza caldera; the caldera fault system provided channels by which the mineralizing fluids moved out from Bonanza center. Hydrothermal alteration and mineralization are common in the southwest Bonanza area, but not so intense as in the central mining district mapped by Burbank (1932).

The Klondike and Spook City Mines of southwest Bonanza area are situated within a few miles of the subject area; these mines are situated along fault extentions of the Bonanza caldera. Production amounts from these mines, however, were minimal as evidenced by relative size of operations and lack of production figures in Colorado Bureau of Mines files. According to Del Rio (1960) mineralization of the Bonanza district is unfavorable to sustained large scale production because of structural complexities and comparative shortness of most ore shoots; however, the area could be well-suited to small operations of the 2 to 4 man type.

Marshall Pass district is best known for its uranium potential, having produced about $6,000,000 worth of uranium from fractured Paleozoic sedimentary rocks on or near the Chester thrust fault. The Chester fault may be an extention of Middle Creek fault which cuts through the subject area. Ore production in 1960 averaged 0.4% U_3O_8 from mainly underground operations. The district is currently an active producer of uranium.

Homestake Mining Company has a significant uranium deposit at the Pitch Mine north of Marshall Creek. District geology is similar to the subject area, with considerable volcanics, sedimentary and Precambrian rocks.

Cochetopa district contains significant uranium deposits in geologic settings similar to the subject area. A wide variety of Precambrian through Tertiary age rocks are present. Faulting and shearing dominate the structure. The east-trending Los Ochos fault contains most ore-reserves. Running about 3½ miles in length, the fault has abnormal radio-activity in a number of places, with visible secondary uranium minerals. Mineralization is related to silicified and brecciated sandstone and mudstone, and altered metamorphic rocks containing pitchblends in veinlets with marcasite.

Oxidized uranium minerals include autunite and uranophane. Chalcedony, barite, and quartz; and hydrothermal clay minerals are gangue minerals. Ore bodies are situated along faults, especially where accompanied by brecciation of sedimentary rocks. The Morrison and Dakota formations contain most favorable host rocks, although Precambrian schist is also widely mineralized. The district was discovered in 1954 and was mined until about 1962. Ores being produced in 1960 ran about

0.16% U_3O_5. Total production, as of 1974 (Marsh, 1974) was about $2,500,000 of uranium with some gold, silver, and lead. There are two theories on the origin of the Cochetopa uranium deposits: 1) hypogene vein-type, and 2) supergene enrichment along the Los Ochos fault zone. Olson (USGS-1976) favors the second theory as providing conditions favorable for deposition of uranium by ground waters moving through overlying volcanic rocks and down an ancient paleovalley and a pre-volcanic erosion surface. He suggests that delineation of ancient erosion surfaces and paleodrainage systems, such as those at the base of Tertiary volcanics, may be useful guides in exploration for deposits in similar geologic settings.

III. Findings Within the Study Area

A. Past Mining Activity and Mineral Occurrences

Past mining activity has consisted mainly of prospecting for uranium, thorium, base and precious metals, although little or no production has occurred. See Figure 3 for the following discussion.

Numerous prospect pits are found along the Sheep Creek fault zone, T. 45 N., R. 5E., and southward into sections 6 and 7, T. 44 N., R. 5E. Shallow pits were cut with a bulldozer into Tertiary volcanic formations and sandstone-shale of the Dakota and Morrison Formations; corner posts are absent, although a single unmarked stake is present at each site; no location notices are displayed. Available information indicates that prospecting took place probably during the uranium boom of the 1950's. Field examination (geochem sampling and scintillator), of these prospects failed to reveal any radioactive anomalies.

Bruns (1971) indicates some metallic sulfide mineralization occurs near the Jacks Creek mine, along the fault-intrusive zone previously discussed. The mine, situated in SE1/4 section 31, T. 46 N., R. 6E, reportedly contains small amounts of galena and sphalerite. Minute crystals of pyrite are present in a silicified volcanic plug near the mouth of Ward Gulch, section 36, T. 46 N., R. 5E. Bruns (1971) reports an absence of any potentially valuable metal samples of both types of alteration analyzed. Mrs. Kempner of Villa Grove, Colorado, says her brother and Gene Williams (claimant) deceased, hauled one small shipment of lead ore from the Jacks Creek mine. She says just one small block of ore was all the men found.

Float pickups along Cross Creek indicate possible vein occurrences of hematite and magnetite in Precambrian gneiss and schist in NW 1/4 section 30, T. 46 N., R. 6E. Spectrographic analyses taken of a float sample (Bruns (1971) showed no appreciable concentration of metal other than iron.

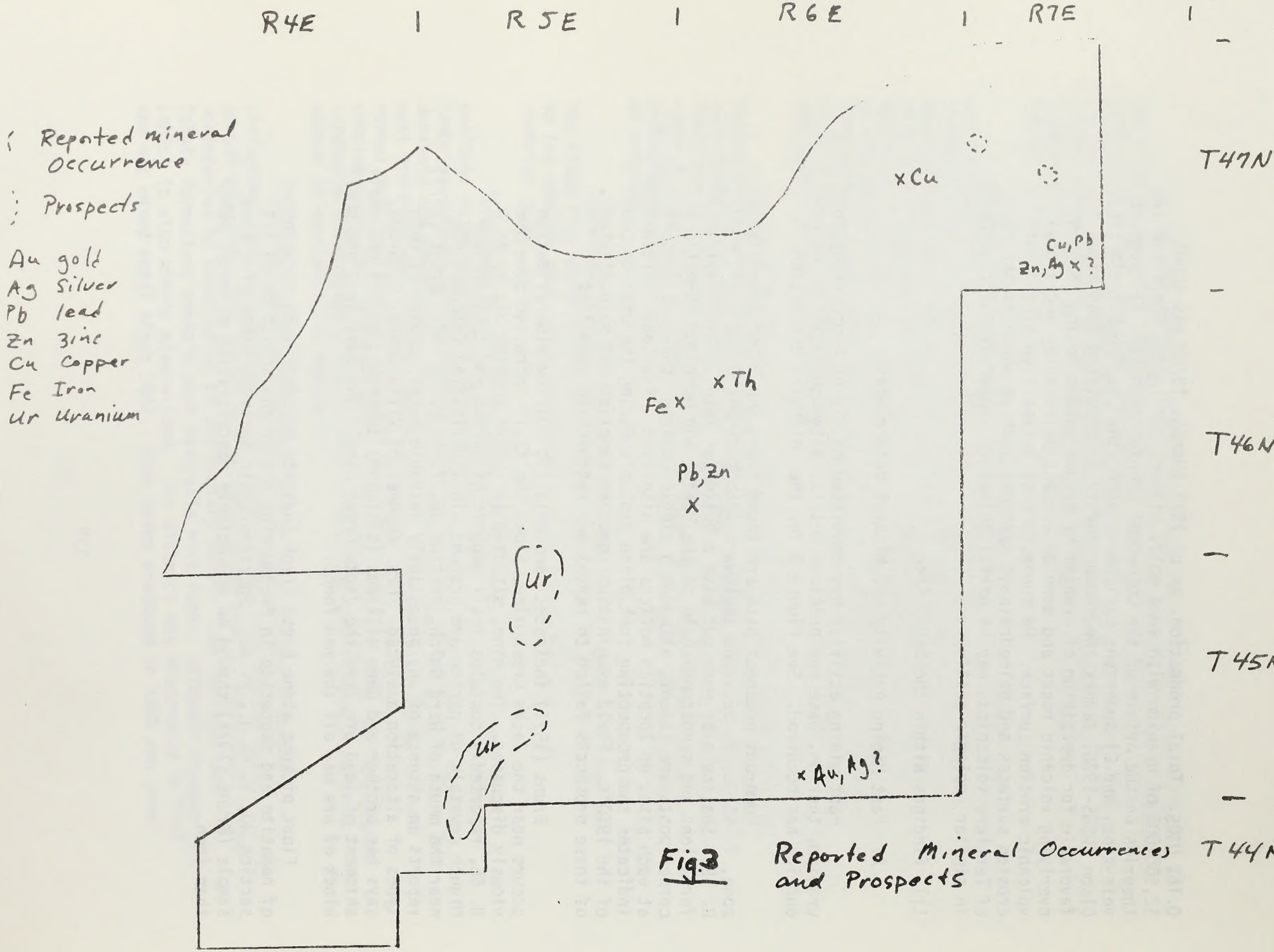


Fig. 3 Reported Mineral Occurrences and Prospects

Several claims were staked in 1974 in sections 20 and 29, T. 46 N., R. 6E., by Mr. Kenneth Lambert of Saguache, Colorado, for thorium and rare earths. The thorium is commonly associated with dark mafic syenite dikes and veins cutting Precambrian granite. Field investigation of the claims showed only slight radioactivity.

Other mineral occurrences in the study area are shown on USGS. map MR-57, Reported Occurrences of Selected Minerals in Colorado:

Gold - Silver: queried location about section 33, T. 45 N., R. 6E. Field investigation and geochemical sampling of this area failed to confirm this reported occurrence.

Copper - Lead - Zinc - Silver: queried location about section 33, T. 47 N., R. 7E. Not investigated, but because of proximity to western boundary fault of Bonanza caldera, location seems reasonable.

A prospect is located in section 20, T. 47 N., R. 7E., near Antora Meadows in the extreme northeastern part of the study area.

Another possible prospect is situated in section 18, T. 47 N., R. 7E., at the head of east Middle Creek. It was not possible to visit either of these prospects during field investigation.

B. Geophysical Surveys

Aeromagnetic mapping is shown on GP-836, Aeromagnetic Map of Colorado (attached). A major anomalous trend is shown which transects the northeast portion of the study area. Marrs (1973) says the trend is sufficiently strong and continuous to be interpreted as a regional change related to basement structure; minor lobes along the major trend reflect near-surface anomalies. The southeastern lobe suggests an anomalous body lying near the southeast corner of the Bonanza area. The central lobe suggests a body of high susceptibility in the southern part of the central collapse area, while the northwestern lobe corresponds to an anomalous body in the vicinity of Antora Mountain and East Middle Creek within the study area. The relatively high relief exhibited in the magnetic contours denotes that the anomalous bodies are at- or near-surface, but their exact nature cannot be determined. They could represent volcanic plugs or necks, zones of relatively high iron content (and metallic ore body) or fluctuations along a major basement discontinuity (Marrs, 1973).

A moderately anomalous trend is apparent in the northwestern part of the study area, with a couple of minor lobes possibly representing near-surface anomalies. This apparent trend, however, is less defined and less certain than the strong trend to the east.

The magnetic anomalies discussed above correlate fairly well with gravity lows shown on GP-895, Bouger Gravity Map of Colorado (see attached).

C. Geochemical Survey

A geochemical survey was conducted to supplement other available information (Plate II). About 100 stream sediment samples were collected from Saguache Creek and its tributaries. The sampling, intended to be reconnaissance in nature, was conducted at about 2-mile intervals except where geology or suspected mineralization warranted additional samples. Samples were sieved and dried and shipped to Colorado School of Mines Research Institute for analyses (see attached results). Tests were run for copper, lead, zinc, and uranium - those most likely to occur in the area. Overall, most readings fell within the range normally expected for rocks of intermediate to granitic composition, although some zinc values were above normal. Frequency distribution graphs were constructed and threshold values for each mineral determined as follows: Copper, 13 ppm (parts per million); Lead, 16 ppm; Zinc, 80 ppm; Uranium, 3 ppm.

An anomalous trend was found along the upper reaches of East Middle Creek, on National Forest. Results show increasing concentration of zinc, copper, lead, and uranium, beginning at SW 1/4 section 14, T. 47 N., R. 6E. (Plate II). Interestingly, this anomalous trend is overlapped by the strong geophysical trend discussed above which cuts through the northeast part of the study area. Field examination of the area revealed a showing of copper (Figure 3) along East Middle Creek, section 14, T. 47 N., R. 6E, near the uppermost geochemical sampling point. Malachite occurs as bead-like fillings within silicified and altered vesicular volcanic rock. Malachite was the only mineral identified, although other mineralization may also be present. The above evidence strongly suggests the presence of significant mineralization at the headwaters of East Middle Creek, very near Bonanza center.

A concentration of values, somewhat above threshold, was obtained for copper and lead along the upper reaches of Jacks Creek and its tributaries, near the USFS-BLM boundary, T. 46 N., R. 5E. A moderate geophysical anomaly is situated just to the northwest, although there is very little overlap of the two anomalies. The significance of this slight geochemical anomaly is uncertain, although a pattern of slightly anomalous copper and lead values over a fairly broad area could indicate mineralization at depth. No surface mineralization was seen during field exam.

Overall uranium geochem values were unimpressive. Areas of potential mineralization, drained by Sheep Creek, Jacks Creek, and lower Middle Creek yielded no anomalies. Initial results indicated a possible uranium anomaly along Bear Creek, T. 46 N., R. 6E; however,

the samples had very high organic content which tends to concentrate uranium. New samples were taken and corrected for organic content, resulting in normal uranium concentrations; thus, no anomaly is present.

Special sampling near the fault-intrusive zone indicates above-normal zinc values southwestward along a narrow zone from Cross Creek to near Alkali Spring. Anomalous zinc values were obtained just south of Alkali Spring (section 16, T. 45N., R. 5E.), and Cross Creek (section 32, T. 46N., R. 6E). The highest zinc reading was taken near Jacks Creek mine, where high copper and lead are also present. There appears to be possible zinc (and other base metals) mineralization related to the fault-intrusive zone, although this theory would require further substantiation.

Throughout the study area, individual "hot spots" turned up, although isolated values above background are insufficient to establish anomalies. High values for lead and zinc were found along Poison Gulch near the eastern boundary of the subject area. Further sampling up the gulch would be needed, outside the subject area, to establish a trend. An above-normal zinc value was obtained along Mill Creek, T. 45N., R. 6E., although another sample one-half mile downstream gave a normal reading. An above-normal lead value was obtained along East Pass Creek (T. 46N., R. 4E), although lead values are flat further downstream. A slightly above-normal uranium value was found along Indian Creek (T. 46N., R. 6E.), but no trend was established.

D. Radiometric and Geologic Reconnaissance

Potentially favorable geologic structures and formations were examined, such as the complexly-faulted eastern portion, the fault-intrusive zone, the heavily-prospected Sheep Creek area, Precambrian outcrops, volcanic tuffs and conglomerates, and outcrops of the Dakota-Morrison Formations. Overall, the study area shows very little surface evidence of mineralization, in large part due to the extensive volcanic cover.

The only observed base metal occurrences were along East Middle Creek and in the vicinity of Jacks Creek, both discussed above.

Radiometric reconnaissance throughout the area concentrated mainly on faulted areas, volcanic tuffs and conglomerates, and Precambrian formations. None of these areas yielded significant radioactivity.

Precambrian exposures near Jacks Creek do contain small vein occurrences of thorium and maybe uranium, but radioactivity at these sites is only slightly anomalous. Exposures of Dakota and Morrison formations yielded no anomalies.

IV. Input From Industry and Governmental Agencies

Prior to completion of this study, various state and federal geological agencies and the Colorado Mining Association were asked to submit their opinions as to mineral potential of the area. Numerous replies were received and are included as attachments to this report.

Most replies voiced objection to the withdrawal on the general assertion that the area may have potential for future discoveries of uranium and base metals. None of the replies contained adequate substantiation other than common knowledge mineral occurrences or general relationships with surrounding areas. Hard core data such as assays, drill hole logs, etc., was not submitted. One industry representative stated that the mineral potential within the proposed withdrawal area would not be very great.

V. Discussion of Minerals Potential (See Plate III - Minerals Potential Map).

A. Base and Precious Metals

Potential mineralization would be tied to Tertiary volcanic and intrusive activity. Occurrences would be of the vein type, genetically related either to Bonanza Caldera or faulting and intrusive activity near Jacks Creek.

The most favorable area is in T. 47N., R. 6E., and R. 7E., on USFS, situated between two significant mining districts - Bonanza and Marshall Pass. The "western boundary fault" of Bonanza Caldera extends into the area, and Middle Creek may represent an extention of mineralized faults emanating from the Marshall Pass District. A geophysical anomaly covers the area, as indicated by USGS Map GP-836). A geochemical anomaly was determined from stream sediment sampling along East Middle Creek, along with a showing of copper. This area is considered highly favorable for base metal sulfide occurrences of possible economic significance.

A geochemical anomaly (zinc), occurs along trend with the Jacks Creek fault-intrusive zone, together with evidence of surface alteration and base metals mineralization (T. 45N., R. 5E.). More significant mineralization could occur at depth, related to a local intrusive event which occurred prior to collapse of Bonanza Caldera to the east.

Throughout the remainder of the study area, there is little evidence of mineralization related to faulting. Even though northeast trending faults near Middle Creek in T. 46N., R. 6E. may be related to collapse of the Bonanza Caldera, the fractures were probably too remote from Bonanza center to have been influenced by mineralization.

VI. Conclusions and Recommendations

Comprehensive examination of the proposed Trickle Mountain withdrawal has revealed areas of high mineral potential as well as areas of no apparent potential. Other areas are undefinable because of geologic uncertainties (see Plate III).

(1) I recommend that the following area remain open to mineral entry due to high mineral potential:

T. 47 N., R. 7 E., all (USFS)
T. 47 N., R. 6 E., all (USFS)
T. 46 N., R. 6 E., Sections 3 and 10 (BLM)

The area is highly prospective for uranium and base metal sulfides.

(2) The following area has an indicated potential for base metal sulfides:

T. 45 N., R. 5 E.
Sections 1, 2, 10, 11-16, 22 (BLM)
T. 45 N., R. 6 E. (BLM)
Sections 6 and 7
T. 46 N., R. 6 E.
Sections 27-29, 31-33 (BLM)
T. 46 N., R. 5 E.
Section 36 (BLM)

More detailed subsurface evaluation is needed to better define that potential. The USGS or U.S. Bureau of Mines should be contracted to drill along the fault-intrusive zone to determine mineralization at depth.

(3) The area west of Trickle Mountain (shaded blue, Plate III), contains a thick cover of volcanic rocks. Although there are no apparent surface mineral indications, the area could be inferred to contain uranium deposits buried at depth, based on areal geology. Therefore, I feel that a more detailed subsurface evaluation in this area should be accomplished by either USGS or the U.S. Bureau of Mines, by drilling or some other means. This effort should concentrate in particular upon T. 45 N., R. 5E., and T. 46 N., R. 5E., in the vicinity of Sheep Creek syncline and fault zone.

(4) About 52,000 acres in the eastern portion of the study area have low mineral potential and could be withdrawn without detrimental effect on the mineral resource (purple shading, Plate III).

VII. References

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Anonymous, 1971, Reported Occurrences of Selected Minerals in Colorado. U.S.G.S. Map MR-57.

APPENDIX C

Proposed Land Exchange

DEPT OF INTERIOR
B.L.M. LAND MANAGEMENT
COLO STATE OFFICE, DENVER
'75 DEC 13 AM 10:10

Merrill G. Anderson, Acting Chief
Branch of Land Operations
Bureau of Land Management
1600 Broadway
Denver, Colo. 80202

Refer to
CO-943(A)
C-14624-P.E.

Dear Mr. Anderson:

Thank you for your letter of Dec. 1st, advising us that the E½ NW¼ of Sec. 30 - T. 46N, R. 6E., a portion of lands requested for exchange, in Saguache County, has been rejected.

We now wish to amend our proposal as follows:

Selected Lands requested.

T. 45 N., R. 6 E, Section 5: Lot 2	—	39.1 acres (?)
T. 46 N., R. 6 E. Section 32: E½ NW¼ NW¼ and S½ SW¼ SE¼	—	40.0 "
T. 46. N. R. 6. E - Section 29 - SW¼ - NW¼	-	40.0 "
T. 46. N R. 6 E, Section 30 - SE¼ - NE¼		40.0 "
T. 44 N., R. 8 E, Section 21: E½ SE¼		80.0 "
Total		239.1 acres.

Offered Lands for Exchange

T. 45 N, R. 5 E, Section 14: NW¼ - 160.0 acres.

We shall appreciate your attention to this matter. Thank you.

Very sincerely

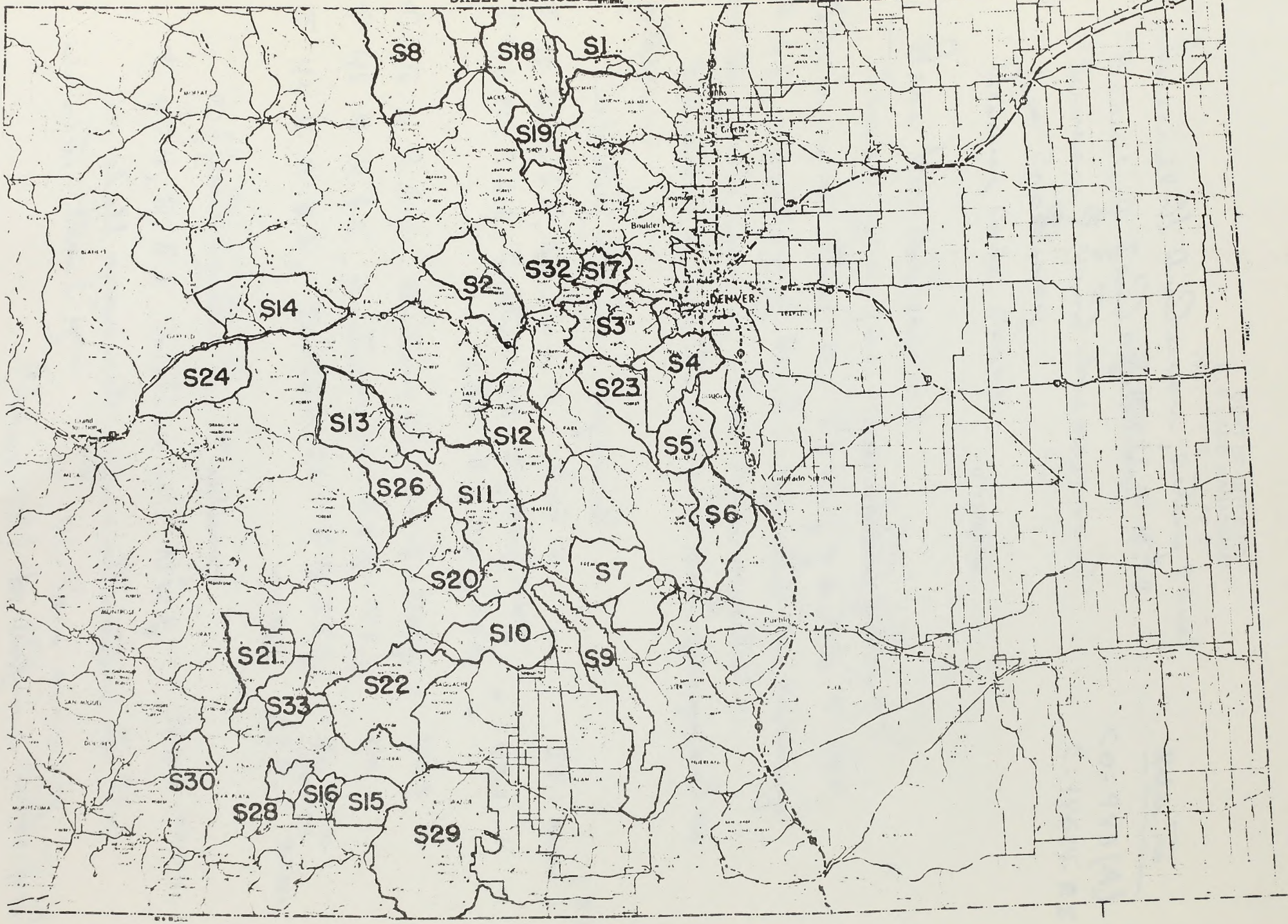
(Mrs. V. H.) Mrs. Virginia Dietrich
Saguache, Co. 81147

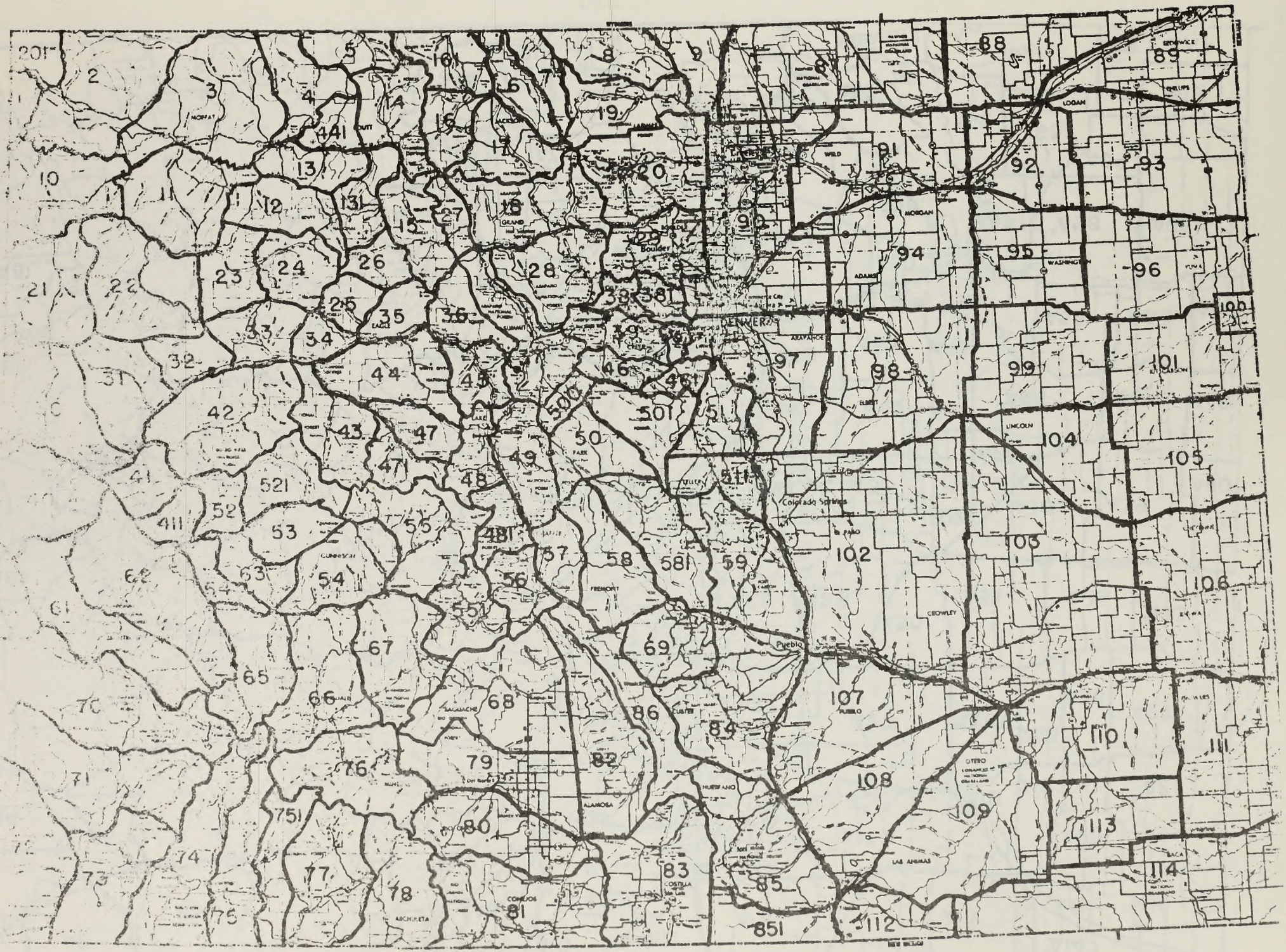
Phone 256-4272

APPENDIX D

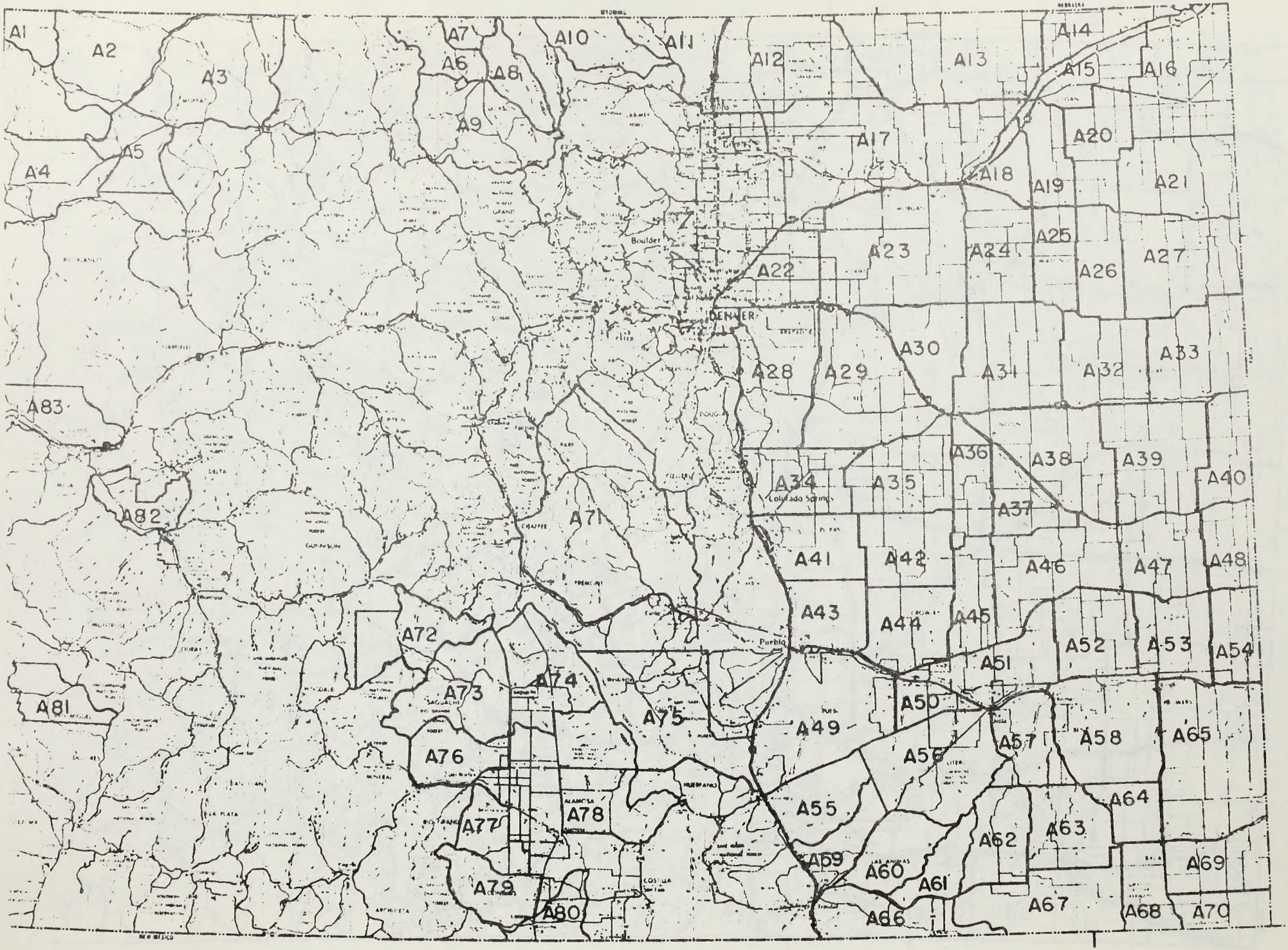
Game Management Units

SHEEP MANAGEMENT AREAS




Boulder
DENVER
Colorado Springs
Pueblo
LOGAN
PHILLIPS
MORGAN
WELD
ADAMS
ARAPAHOE
WASHINGTON
ELBERT
LINCOLN
EL PASO
CROWLEY
OTERO
LAS ANIMAS
FREMONT
CUSTER
HUERFANO
ALAMOSA
CONEJOS
COSTILLA
ARCHULETA
SAGUACHE
GUNNISON
PARK
TELLER
EAGLE
GRAND
SUMMIT
CLEAR CREEK
JEFFERSON
ARAPAHOE
PUEBLO
BENT
PROWERS
KIOWA
CHEYENNE
KIT CARSON
LAKE
CHAFFEE
MONTROSE
DELTA
MESA
GARFIELD
RIO BLANCO
MOFFAT
ROUTT
JACKSON
LARIMER
WELD
ADAMS
DOUGLAS
ELBERT
PUEBLO
OTERO
LAS ANIMAS
BACA
PROWERS
KIOWA
CHEYENNE
KIT CARSON
LINCOLN
EL PASO
CROWLEY
BEN

PRONGHORN (ANTELOPE) MANAGEMENT AREAS



APPENDIX E

BLM - Colorado State College

Coop Research Background

'76 NOV 3

Department of Fishery and Wildlife Biology

Colorado State University
Fort Collins, Colorado
80523

2 November 1976

Dale R. Andrus
State Director
Bureau of Land Management
Colorado State Office, Room 700
Colorado State Bank Building
1600 Broadway
Denver, Colorado 80202

Dear Dale:

I routed your letter of September 24 to the faculty in the Department of Fishery and Wildlife Biology at Colorado State University. I asked our faculty members to indicate which of the proposals they would be willing to prepare by initialing opposite the specific research title. I think you can accept the fact that a research proposal takes a great deal of time to do if it is done correctly. Our faculty members are very much interested in doing research in cooperation with the Bureau of Land Management. However, a broad ill-prepared, hastily done research proposal is not the answer. I suggest that the Bureau of Land Management decide which of these projects they want done on a priority basis. If there is some indication of success, our faculty members will then be very happy to complete and submit a research proposal.

The results of routing the list of proposals are as follows:

13. Large herbivore relationships on Trickle Mountain, Saguache County, Colorado (Dr. Jim Bailey) — Can-City

14. Waterfowl and shorebird distribution and seasonal use areas on selected reservoirs in eastern Colorado (Dr. Ronald Ryder) — " "

15. The distribution and population densities of greater and lesser prairie chickens on NRL in eastern Colorado (Dr. Dale Hein) — " "

16. The impacts of present livestock management and evaluation of potential impacts of other systems on riparian flora and fauna of selected streams and reservoirs in south central Colorado (Dr. Bob Behnke) — " "

17. The effects of coal strip mining on ground and surface water quality and quantity as related to riparian flora and fauna in the Raton Basin of Colorado (Dr. Alex Cringan) — " "

18. Analysis of the Arkansas River bighorn sheep herd in southcentral Colorado (Dr. John Schmidt, Dr. Jim Bailey) — " "

19. Relationships between mountain lion numbers and predation on mule deer, elk, bighorn sheep and domestic livestock in south-central Colorado (Dr. Alex Cringan) Can. City/mont.

20. The impacts of roads on wildlife along the front range of the Rocky Mountains of Colorado (Dr. Alex Cringan) Can. City

From the Grand Junction Office, two projects were listed. These are:

1. Mitigating measures for expected growth and development in the Eagle River Valley from Vail to Dotsero, Colorado, with primary species including mule deer and elk (Dr. Jim Bailey)

2. The feasibility of reintroducing peregrine falcon in the following areas: Unaweep Canyon, DeBeque Canyon, Ruby Canyon, Dolores River Canyon, Gunnison River Canyon and Upper Colorado River (Dr. Ron Ryder)

From your letter I deduce that you did not want interest professed in the listing of proposed projects from Craig, the three from Grand Junction, four from the Montrose District and three from the Canon City District. Again let me reiterate that the faculty at Colorado State University are very much interested in doing research with and for the Bureau of Land Management. A good research proposal takes a great deal of time and effort to do it well. If you can indicate which of these projects are first in your system of priorities we would be most happy to prepare research proposals for you. I'd be most happy to meet with you and others of your staff to work out the details. ?

Sincerely Yours,

D. L. Gilbert
Department Head

DLG:ljc

cc: Ed Roberts

Project Title: Study to Determine Foods of Livestock, Mule Deer, Elk, Bighorns and Antelope in the Trickle Mountain Wildlife Habitat Area, Saguache County, Colorado.

Duration of Study: September 1, 1976 through July 30, 1977.

Background and Need:

During the past 15 years mule deer (Odocoileus hemionus) populations in the Trickle Mountain Wildlife Habitat Area have been declining while bighorn sheep (Ovis canadensis) populations have been increasing. The most important consideration for proper multiple-use management of big game and livestock is providing adequate year-round supply of food produced by range plants.

Certain portions of the Trickle Mountain Wildlife Habitat Area are used by bighorns, cattle, antelope and elk although the seasons of use may differ between classes of herbivores. On the winter ranges of big game, the effects of grazing by livestock in the summer might limit the numbers of big game which can survive, if common foods are in short supply.

Perusal of the literature suggests that more is published about big game diets than is known about livestock diets. Hansen and Reid (1975) reported on the diets of deer, elk and cattle for the area between Fort Garland and La Veta Pass. Todd (1975) has published on the food habits of bighorns in the Trickle Mountain area. The aspect of food competition has not been adequately documented and needs to be investigated for the Trickle Mountain Wildlife Habitat Area. Estimating the food habits of big game and livestock from the literature for management application at Trickle Mountain could be very risky. The published literature confirms the general assumption that livestock and big game species are capable of utilizing a wide variety of plants for food and range plant production and food availability varies from one area to another. Conflicting conclusions are created whenever base-line data on food habits are not taken from the area to be managed.

Objective:

To determine the proportions of the major foods of livestock, elk, bighorns, mule deer, and antelope on major habitat types for the Trickle Mountain Wildlife Habitat Area.

Procedures:

1) Twenty areas in the "Trickle Mountain Winter Range" (Shepherd, 1975); 20 areas in the "Intermediate Range" and 20 areas in the bighorn sheep "Lambing Range" will be studied. The vegetation on these areas has been intensively studied by Shepherd (1975).

2) The major foods eaten from each area (60 total) will be quantified by a microhistological technique (Sparks and Malechek, 1968) from fecal samples of big game and livestock.

3) At least 10 subsamples of fecal material from each herbivore which has used an area will be collected. The collections will be done by personnel of the CSU Composition Analysis Laboratory. The sampling will be done across the study area where Shepherd (1975) has mapped the major vegetation types.

4) Microscope analyses will be conducted by the CSU Composition Analysis Laboratory. One hundred microscope fields per sample will be studied. Similarity of the foods consumed between herbivore species and between areas will be studied by computer analyses.

Personnel:

The work at the Composition Analysis Laboratory and field collections will be supervised by Dr. Richard M. Hansen. The Composition Analysis Laboratory has two full-time staff members (Foppe and Gilbert) and five other technicians who are experienced in microhistological analyses.

Estimated Expenditures:

Personnel Services	$ 2500.00
Operating Supplies and Services	250.00
Laboratory Analyses	4000.00
Computer Costs and Key Punching	250.00
Total Cost of Project	$ 7000.00

Responsibility:

Colorado State University, Range Science Department, Fort Collins, Colorado, 80523 (Richard M. Hansen, 215 Natural Resources, Phone: 491-6410).

Literature Cited:

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Todd, J. W. 1975. Foods of Rocky Mountain Bighorn Sheep in southern Colorado. J. Wildl. Manage. 39:108-111.

Attachment 2 Summary of Colorado BLM-Colorado State University Wildlife Research Proposals Submitted for Funding Consideration

Proposal	CSU Principal Investigator	Fund Amount Submitted	Duration	Fiscal Year of Research Start	Fiscal Year of Research End	Total Estimated Funds
oods of livestock, mule deer, elk, bighorns and antelope in the Trickle Mountain wildlife habitat area.	Dr. Richard Hansen	$7,000/yr.	Two years	1978	1979	$14,000
. of prescribed fire in management of ghorn sheep habitat, Trickle Mountain ldlife habitat area.	Dr. James Bailey	$24,000/yr.	Four years	1978	1981	$96,000
sponses of mule deer to mechanical nipulation of vegetation in small tches within winter habitat, Piceance sin, Colorado.	Dr. James Bailey	$15,000/yr.	Four years	1978	1981	$60,000
fect of range fertilization upon forage oduction and use by livestock and big me in the Sagebrush type, North Park, lorado.	Dr. James Bailey	$15,000/yr.	Two years	1979	1980	$30,000
terfowl and shorebird distribution l-seasonal use areas on selected voirs in eastern Colorado.	Dr. Ronald Ryder	$15,000/yr.	Two years	1979	1980	$30,000
stribution and population densities greater and lesser prairie chickens NRL in eastern Colorado.	Dr. Dale Hein	$15,000/yr.	Two years	1979	1980	$30,000
pacts of present livestock management l evaluation of potential impacts of ner systems on riparian flora and una of selected streams and reservoirs South Central Colorado.	Dr. Robert Behnke	$20,000/yr.	Four years	1979	1982	$80,000

APPLIED RESEARCH AND DEVELOPMENT - ONSHORE FY 78

Recreation Management - 1280

California

Visual Resource Research on Sensitivity Level Determination and Contrast Rating Methods	30,000

Colorado

Measuring Dispersed Use and Visitor Preferences	30,000

DSC

Baseline Study of Characteristics and Attitudes of River Recreation Users	12,000
Total Recreation	$ 72,000

Wildlife Management - 1285

Arizona

Field Research on Desert Tortoise	10,000

Colorado

~~Big~~ Horn Sheep - Trickle Mtn.	30,000
Responses of Mule Deer to Mech- Manipulation of Vegetation in small Patches of ~~Water~~ Winter Habitat	15,000

Idaho

Population Ecology and Habitat Requirements of Townsend Ground Squirrels	18,500
Social Interaction of Birds	37,000
Density & Species Composition of Small Mammals and Birds	33,000
Raptor Nesting & Feeding Behavior	29,000
Raptor Tolerance Study	20,000
Effects of Habitat Alteration on Long-Billed Curlew	20,000

Draft

STATEMENT OF WORK

Study to determine Livestock, Mule Deer, Elk, Pronghorn and Bighorn Competition for Forage and Potential Habitat Improvements Within the Trickle Mountain Wildlife Habitat Area, Saguache, Colorado

1. Task Statement

A. Conduct all work related to this study within the areas deliniated on the attached map. Maps and aerial photos shall be provided by BLM as needed.

B. Conduct new habitat site inventories or use existing data, if available in sufficient detail, to establish: species composition, by habitat site; species density, by habitat site; production, by species; utilization, by plant species.

All new inventories shall comply with BLM Manual requirements. Appropriate BLM Manuals shall be provided by BLM as needed.

A minimum of one transect shall be conducted per habitat site or 640 acres, which ever is smallest.

Supervision and equipment shall be provided by CSU as needed.

C. A fecal analysis of livestock, elk, mule deer, pronghorn and bighorn shall be conducted by season to determine the degree of diet overlap.

The supervision, manner of collection and analysis as well as equipment shall be furnished by CSU as needed.

D. Conduct studies to determine the habitat area's response to range fertilization and/or seeding.

The supervision techniques and equipment shall be furnished by CSU as needed.

E. A written report (Masters Thesis) shall be produced no later than three months after completion of all requirements of the Masters Program. This report shall include the summary of all field data and shall answer the following questions:

1. What are existing levels of competition between the subject species, by season of use.

2. What is the optimum carrying capacity of the area for the subject animal species in total and by species.

3. How can these optimum carrying capacities be obtained (management methods)

4. How does the habitat area respond to range seeding and fertilization and what is the optimum rate of fertilization and/or seeding from the cost-benefit and increased production aspects.

A qualified BLM employee shall be included as a member of the Masters Committee to insure that all work has been conducted to BLM Manual requirements.

2. Deliverables

A. BLM shall be provided with a progress report every 6 months, from the beginning of the Fall semester, 1977.

Compliance shall be supervised by CSU.

B. BLM shall be provided with a copy of the first draft of the final report.

Compliance shall be supervised by CSU.

C. BLM shall be provided with one "camera ready original" of the final report no later than three months after completion of all Masters Program requirements.

Compliance shall be supervised by CSU.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

JOB DOCUMENTATION REPORT

JOB IDENTIFICATION
1. State (2–3) . . . C 0
2. District (4–5) . . . 0 5
3. Job No. (6–9) . . . 1 1 4 8
4. Transaction Code (10) . . . 1

I – GENERAL DESCRIPTION — Card 1

5. Job Name (11–30): C H U C K A R G U Z Z L E R M A I N

LOCATION CODES
6. Special Project Code (31–34) . . .
7. Planning Unit (35–36) . . . 0 4
8. Sub-Basin (37–38) 3 1 9. County (39–41) 1 0 9
10. Watershed No. (42–44) . . .
11. Allotment No. (45–48) . . .
12. Wildlife Habitat Area (49–51) . . . 0 3

SITE AND VEGETATIVE DESCRIPTION
13. Present SSF (52–53) 14. % Slope (54–55)
15. Exposure (56) 16. Soil Texture (57)
17. Precipitation (inches) (58–59)
18. Elevation (feet) (60–64)
19. Vegetative Subtype (65–67)

COMPOSITION (Percent)
20. Grasses (68–69) 21. Forbs (70–71)
22. Browse (72–73)

COVER (Percent)
23. Vegetative (74–75) 24. Litter (76–77)
25. Bare Ground (78–79)

II – ANNUAL WORK PLAN INPUT DATA — Card 2

75. Subactivity (11–14) . . . 4 3 5 0
76. Work Job Code (15–18) . . . 5 5 6 9

UNITS PLANNED
77. Primary (19–24) . . . 1.0
78. Secondary (25–29) . . .

TIME OF AWARD
79. Fiscal Year (30–31) 7 9 80. Third (32) . . . 2

TIME OF COMPLETION
81. Fiscal Year (33–34) 7 9 82. Third (35) . . . 2

BLM COST 83. Method (36) . . . 1
84. Material (37–41) . . . 1 0 0
85. Contract (42–47) . . . 4 0 0

CONTRIBUTED COST
86. Material (48–52) . . .
87. Labor/Equipment (53–57) . . .

MAINTENANCE
88. Responsibility (58) 1 89. Cycle (59–61) 9 0 1

III – JOB DETAILS AND BENEFITS — Card 3

37. Primary Job Objective (11) . . . 7

PLANT AND PEST CONTROL
39. Chemical (12) 42. Method (13) . . .
45. Mechanical – Method (14) . . .

ARTIFICIAL REVEGETATION
47. Pounds Seed/Acre (15–17) . . .
48. Seedlings/Acre (18–21) 49. Method (22)
51. AUM's Livestock Forage Added (23–26) . . .
52. Future SSF (27–28) . . .

WATERSHED TILLAGE 54. Method (29) . . .
FACILITIES 55. Type (30) 56. Other Misc. (31)

WATER DEVELOPMENT/CONTROL
59. Structure Type (32) . . .
STORAGE (Ac. Ft.) 60. Flood (33–38)
61. Silt (39–44)

WILDLIFE HABITAT DEVELOPMENT/PROTECTION
62. Type (45–46) 2 4 63. Primary Species (47–49) 1 0 3
64. Animal Months (50–54) . . . 7 0
65. Number Increase (55–59) . . . 1 0
66. Pounds Fish Increase (60–64) . . .
67. Rare Endangered (65) . . .

VISITOR DAYS ADDED 68. Fisherman (66–69)
69. Hunter (70–73) 70. Other (74–77)

IV – PROGRESS REPORT — Card 4

COMPLETION DATA
UNITS 90. Primary (11–16) . . .
91. Secondary (17–21) . . .
TIME 92. Fiscal Year (22–23) . . .
93. Third (24) . . .
94. Contract No. (25–29) . . . CT

CONTRIBUTION DETAIL
95. Agreement (30) 96. Participant (31) . . .
97. Contributor's Name (32–51)

CONTRIBUTIONS
98. Deposited (52–56) . . .
Undeposited
99. Materials (57–61) . . .
100. Labor/Equipment (62–66) . . .

V – DETAIL ESTIMATE OF UNITS AND COSTS

WORK DESCRIPTION AND MATERIALS (a)	UNITS EA MILE ETC (b)	UNITS COST (c)	BLM COSTS MATERIALS (d)	BLM COSTS CONTRACT (e)	COOPERATOR COSTS MATERIALS (f)	COOPERATOR COSTS LABOR (g)
Water control valve (water saver)	1 ea.	35.00	35.00			
Misc. Fittings	----------		15.00			
Backhoe	16 hrs.	18.00/hr.		288.00		
Labor	15 man/hr	5.00/hr.		75.00		
TOTALS Materials			50.00			
Labor/Equipment				363.00		

Form 1630-8 (February 1977)

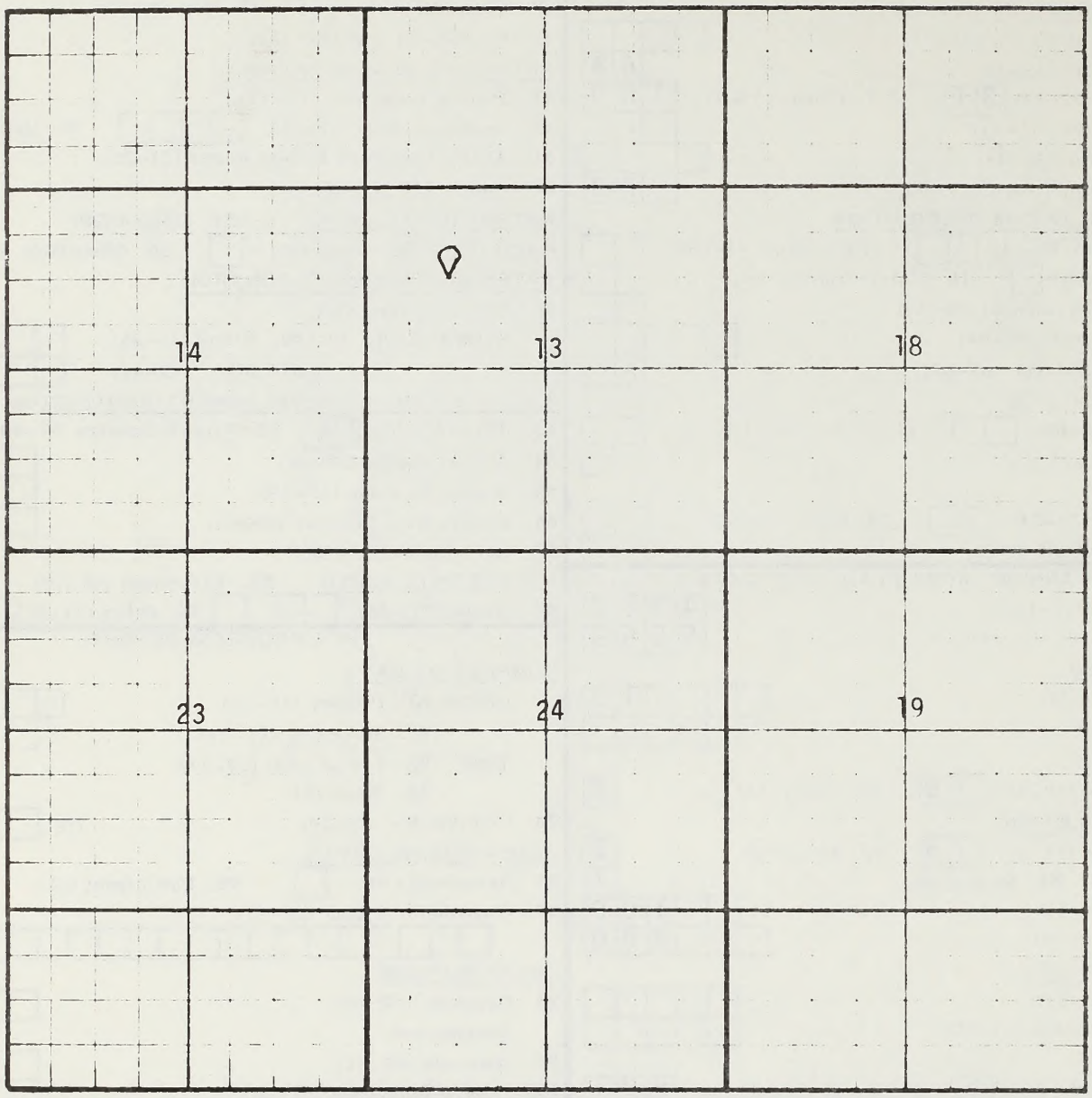
JOB IDENTIFICATION STATE C 0 DISTRICT 0 5 JOB NUMBER 1 1 4 8

VI – LOCATION PLAT

Scale 1 cm = ½ mile

T 4 5 N R 0 6 E Meridian N M P M

Lake Mt.
NE Quad.



VII – NARRATIVE DESCRIPTION OR JUSTIFICATION

Backhoe work could be done with District's backhoe. Labor could be provided by YACC with technical assistance from engineering technicians. This would reduce the actual cost to about $50.00.

Prepared by	Title	Date
J. S. HANNAN	RANGE CONSERVATIONISTS	11/29/77
Approved by	Title	Date

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

JOB DOCUMENTATION REPORT

JOB IDENTIFICATION

1. State (2–3): C 0
2. District (4–5): 0 5
3. Job No. (6–9):
4. Transaction Code (10): 1

I – GENERAL DESCRIPTION — Card 1

5. Job Name (11–30): CEDAR SPRING RESERV.

LOCATION CODES

6. Special Project Code (31–34):
7. Planning Unit (35–36): 0 4
8. Sub-Basin (37–38): 3 1 — 9. County (39–41):
10. Watershed No. (42–44):
11. Allotment No. (45–48):
12. Wildlife Habitat Area (49–51): 0 3

SITE AND VEGETATIVE DESCRIPTION

13. Present SSF (52–53): — 14. % Slope (54–55):
15. Exposure (56): — 16. Soil Texture (57):
17. Precipitation (inches) (58–59):
18. Elevation (feet) (60–64):
19. Vegetative Subtype (65–67):

COMPOSITION *(Percent)*

20. Grasses (68–69): — 21. Forbs (70–71):
22. Browse (72–73):

COVER *(Percent)*

23. Vegetative (74–75): — 24. Litter (76–77):
25. Bare Ground (78–79):

II – ANNUAL WORK PLAN INPUT DATA — Card 2

75. Subactivity (11–14): 4 3 5 0
76. Work Job Code (15–18): 5 5 5 7

UNITS PLANNED

77. Primary (19–24): 1.0
78. Secondary (25–29):

TIME OF AWARD

79. Fiscal Year (30–31): 8 0 — 80. Third (32): 3

TIME OF COMPLETION

81. Fiscal Year (33–34): 8 0 — 82. Third (35): 3

BLM COST — 83. Method (36):

84. Material (37–41):
85. Contract (42–47): 2 9 0 0

CONTRIBUTED COST

86. Material (48–52):
87. Labor/Equipment (53–57):

MAINTENANCE

88. Responsibility (58): 1 — 89. Cycle (59–61): 0 0 3

III – JOB DETAILS AND BENEFITS — Card 3

37. Primary Job Objective (11): 7

PLANT AND PEST CONTROL

39. Chemical (12): — 42. Method (13):
45. Mechanical – Method (14):

ARTIFICIAL REVEGETATION

47. Pounds Seed/Acre (15–17):
48. Seedlings/Acre (18–21): — 49. Method (22):
51. AUM's Livestock Forage Added (23–26):
52. Future SSF (27–28):

WATERSHED TILLAGE — 54. Method (29):

FACILITIES 55. Type (30): — 56. Other Misc. (31):

WATER DEVELOPMENT CONTROL

59. Structure Type (32):
STORAGE (Ac. Ft.) 60. Flood (33–38):
61. Silt (39–44):

WILDLIFE HABITAT DEVELOPMENT PROTECTION

62. Type (45–46): 2 4 — 63. Primary Species (47–49): 1 0 6
64. Animal Months (50–54): 3 0 0
65. Number Increase (55–59): 2 5
66. Pounds Fish Increase (60–64):
67. Rare Endangered (65):

VISITOR DAYS ADDED — 68. Fisherman (66–69):
69. Hunter (70–73): — 70. Other (74–77):

IV – PROGRESS REPORT — Card 4

COMPLETION DATA

UNITS 90. Primary (11–16):
91. Secondary (17–21):
TIME 92. Fiscal Year (22–23):
93. Third (24):
94. Contract No. (25–29): CT

CONTRIBUTION DETAIL

95. Agreement (30): — 96. Participant (31):
97. Contributor's Name (32–51):

CONTRIBUTIONS

98. Deposited (52–56):
Undeposited
99. Materials (57–61):
100. Labor/Equipment (62–66):

V – DETAIL ESTIMATE OF UNITS AND COSTS

WORK DESCRIPTION AND MATERIALS (a)	UNITS: EA MILE ETC (b)	UNITS: COST (c)	BLM COSTS: MATERIALS (d)	BLM COSTS: CONTRACT (e)	COOPERATOR COSTS: MATERIALS (f)	COOPERATOR COSTS: LABOR (g)
Caterpillar for Construction of reservoir	3800 yd^3	$.60/$yd^3$		2280.00		
Bentonite hauling, spreading and disking	25 yd^3	$23.00/$yd^3$		575.00		
TOTALS Materials						
Labor/Equipment				2855.00		

Form 1630-8 (February 1977)

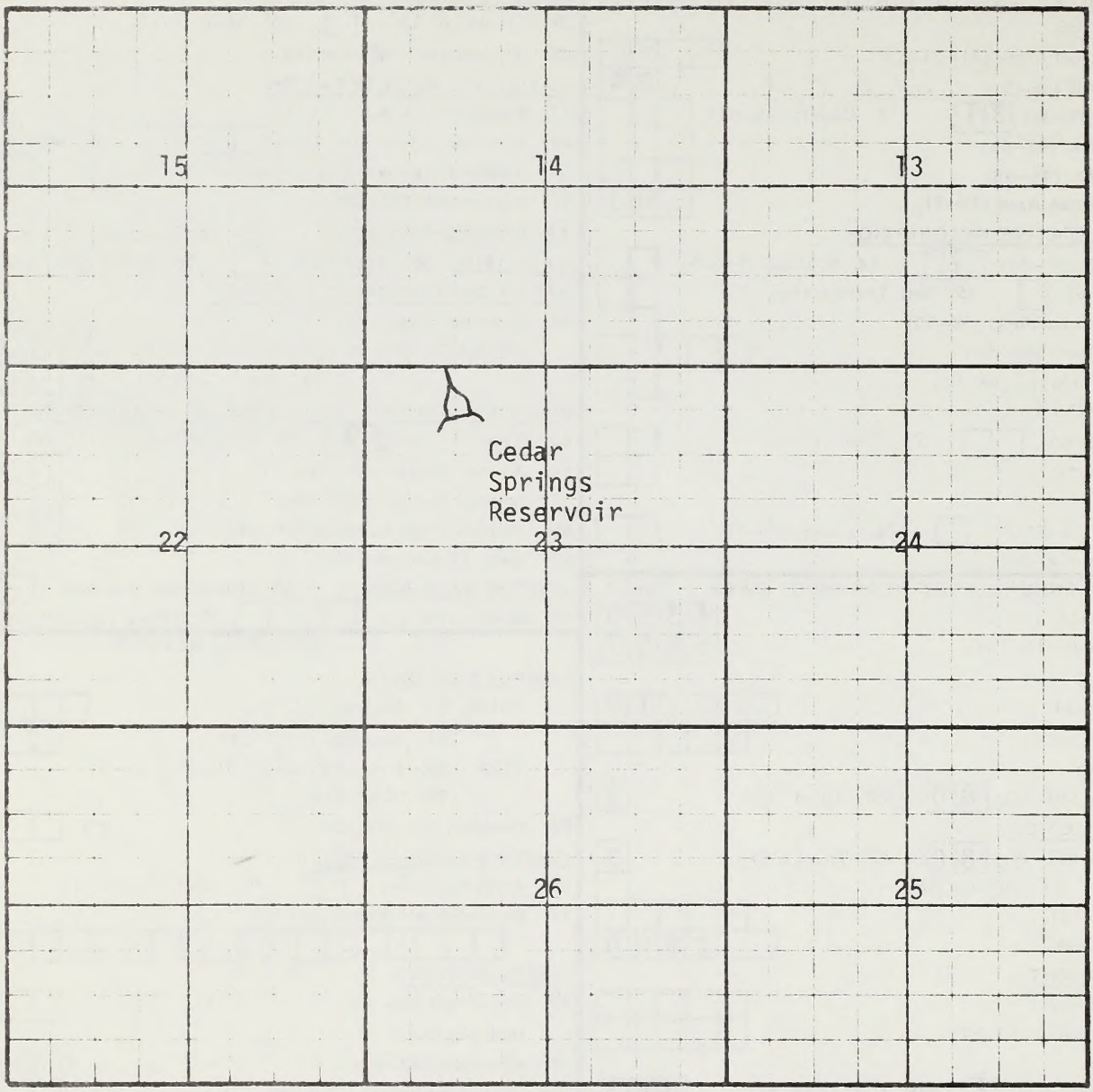
JOB IDENTIFICATION STATE C O DISTRICT 0 5 JOB NUMBER

VI – LOCATION PLAT

T 4 6 N R 0 6 E

Scale 1 inch ½ mile

Meridian N M P M



VII – NARRATIVE DESCRIPTION OR JUSTIFICATION

Take Mt. NE Quad.

Reservoir Specs.(est.): Base = 50 ft, Height = 15 ft, Width at Top = 10 ft., Length = 250 ft., Upstream Slope = 3:1, Downstream = 2:1, Volume of fill = $\sim$ 3800 yds^3

Prepared by	Title	Date
J. S. HANNAN	RANGE CONSERVATIONIST	11/29/77
Approved by	Title	Date

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

JOB DOCUMENTATION REPORT

JOB IDENTIFICATION
1. State (2–3): C0
2. District (4–5): 05
3. Job No. (6–9):
4. Transaction Code (10): I

I – GENERAL DESCRIPTION — Card 1

5. Job Name (11–30): TRICKLE MT CATCHMENT

LOCATION CODES
6. Special Project Code (31–34):
7. Planning Unit (35–36): 04
8. Sub-Basin (37–38): 31
9. County (39–41): 109
10. Watershed No. (42–44):
11. Allotment No. (45–48):
12. Wildlife Habitat Area (49–51): 03

SITE AND VEGETATIVE DESCRIPTION
13. Present SSF (52–53):
14. % Slope (54–55):
15. Exposure (56):
16. Soil Texture (57):
17. Precipitation (inches) (58–59):
18. Elevation (feet) (60–64):
19. Vegetative Subtype (65–67):

COMPOSITION (Percent)
20. Grasses (68–69):
21. Forbs (70–71):
22. Browse (72–73):

COVER (Percent)
23. Vegetative (74–75):
24. Litter (76–77):
25. Bare Ground (78–79):

II – ANNUAL WORK PLAN INPUT DATA — Card 2

75. Subactivity (11–14): 4350
76. Work Job Code (15–18): 5557

UNITS PLANNED
77. Primary (19–24): 1.0
78. Secondary (25–29):

TIME OF AWARD
79. Fiscal Year (30–31): 79
80. Third (32): 3

TIME OF COMPLETION
81. Fiscal Year (33–34): 79
82. Third (35): 3

BLM COST
83. Method (36): 1
84. Material (37–41): 4500
85. Contract (42–47): 13500

CONTRIBUTED COST
86. Material (48–52):
87. Labor Equipment (53–57):

MAINTENANCE
88. Responsibility (58): 1
89. Cycle (59–61): 901

III – JOB DETAILS AND BENEFITS — Card 3

37. Primary Job Objective (11): 7

PLANT AND PEST CONTROL
39. Chemical (12):
42. Method (13):
45. Mechanical – Method (14):

ARTIFICIAL REVEGETATION
47. Pounds Seed Acre (15–17):
48. Seedlings Acre (18–21):
49. Method (22):
51. AUM's Livestock Forage Added (23–26):
52. Future SSF (27–28):

WATERSHED TILLAGE
54. Method (29):

FACILITIES
55. Type (30):
56. Other Misc. (31):

WATER DEVELOPMENT CONTROL
59. Structure Type (32):
STORAGE (Ac. Ft.) 60. Flood (33–38):
61. Silt (39–44):

WILDLIFE HABITAT DEVELOPMENT PROTECTION
62. Type (45–46): 24
63. Primary Species (47–49): 106
64. Animal Months (50–54): 1000
65. Number Increase (55–59): 30
66. Pounds Fish Increase (60–64):
67. Rare Endangered (65):

VISITOR DAYS ADDED
68. Fisherman (66–69):
69. Hunter (70–73):
70. Other (74–77):

IV – PROGRESS REPORT — Card 4

COMPLETION DATA
UNITS 90. Primary (11–16):
91. Secondary (17–21):
TIME 92. Fiscal Year (22–23):
93. Third (24):
94. Contract No. (25–29): CT

CONTRIBUTION DETAIL
95. Agreement (30):
96. Participant (31):
97. Contributor's Name (32–51):

CONTRIBUTIONS
98. Deposited (52–56):
Undeposited
99. Materials (57–61):
100. Labor Equipment (62–66):

V – DETAIL ESTIMATE OF UNITS AND COSTS

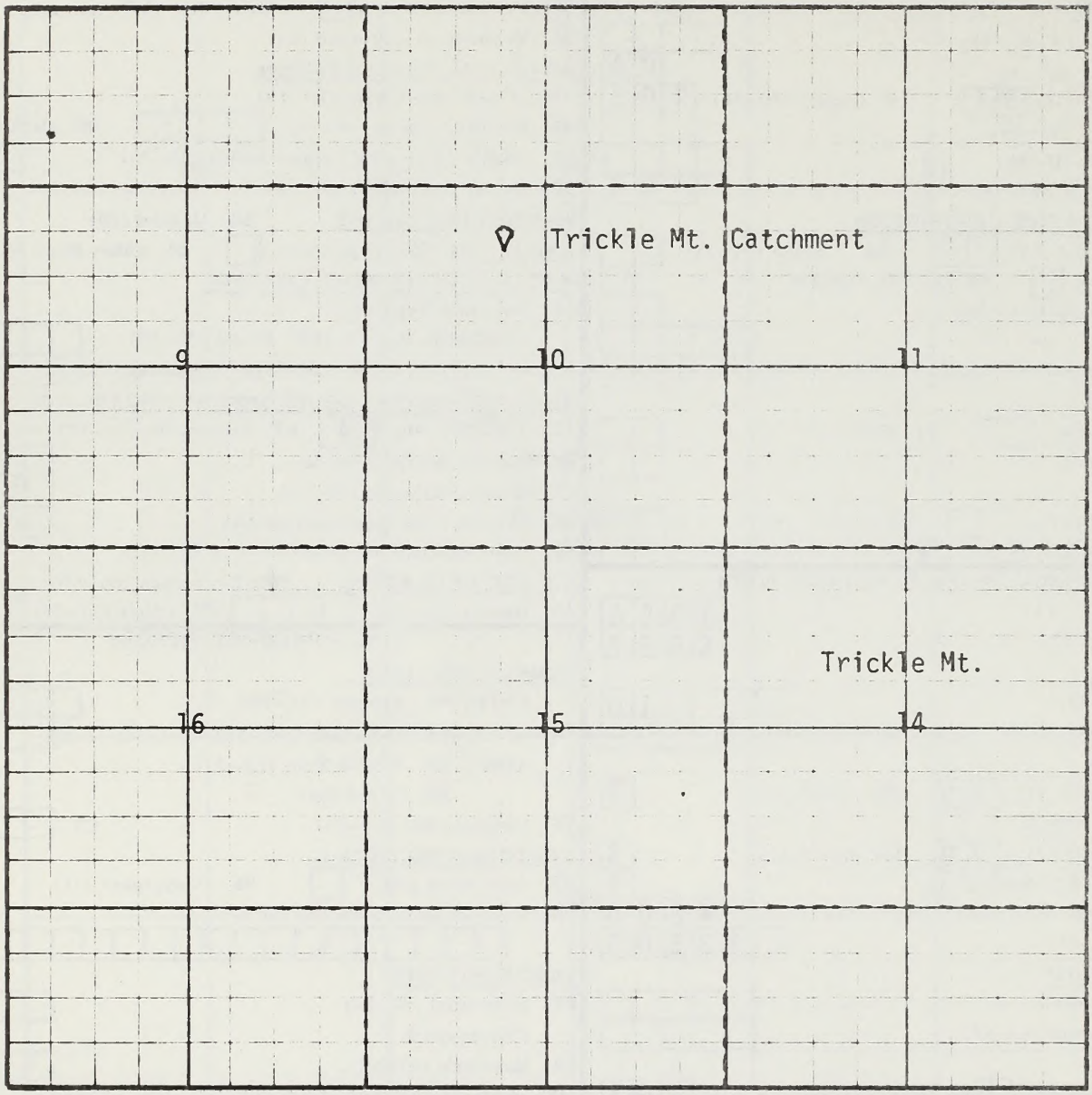
WORK DESCRIPTION AND MATERIALS (a)	UNITS EA MILE ETC (b)	UNITS COST (c)	BLM COSTS MATERIALS (d)	BLM COSTS CONTRACT (e)	COOPERATOR COSTS MATERIALS (f)	COOPERATOR COSTS LABOR (g)
38,000 gal. butyl rubber storage bag	1 ea	3,000.00	3,000.00			
		1,000.00	1,000.00			
Pipe Water Control Valves 8' exchange fence	27 rods		500.00			
Contract (Asphalt base for apron rocks to cover apron, installation				13,500.00		
TOTALS Materials			4,500			
Labor Equipment				13,500.00		

JOB IDENTIFICATION STATE C 0 DISTRICT 0 5 JOB NUMBER

VI – LOCATION PLAT

Scale 1 inch ½ mile

T 4 5 N R 0 5 E Meridian N M P M



VII – NARRATIVE DESCRIPTION OR JUSTIFICATION

Trickle Mt. Quad.

Prepared by	Title	Date
J. S. HANNAN	RANGE CONSERVATIONIST	11/28/77
Approved by	Title	Date

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

JOB DOCUMENTATION REPORT

JOB IDENTIFICATION

1. State (2–3): CO
2. District (4–5): 05
3. Job No. (6–9):
4. Transaction Code (10): 1

I – GENERAL DESCRIPTION — Card 1

5. Job Name (11–30): LONE TREE WELL

LOCATION CODES

6. Special Project Code (31–34):
7. Planning Unit (35–36): 04
8. Sub-Basin (37–38): 31
9. County (39–41): 109
10. Watershed No. (42–44):
11. Allotment No. (45–48):
12. Wildlife Habitat Area (49–51): 03

SITE AND VEGETATIVE DESCRIPTION

13. Present SSF (52–53):
14. % Slope (54–55):
15. Exposure (56):
16. Soil Texture (57):
17. Precipitation (inches) (58–59):
18. Elevation (feet) (60–64):
19. Vegetative Subtype (65–67):

COMPOSITION *(Percent)*

20. Grasses (68–69):
21. Forbs (70–71):
22. Browse (72–73):

COVER *(Percent)*

23. Vegetative (74–75):
24. Litter (76–77):
25. Bare Ground (78–79):

II – ANNUAL WORK PLAN INPUT DATA — Card 2

75. Subactivity (11–14): 4350
76. Work Job Code (15–18): 5557

UNITS PLANNED

77. Primary (19–24): 1.0
78. Secondary (25–29):

TIME OF AWARD

79. Fiscal Year (30–31): 79
80. Third (32): 2

TIME OF COMPLETION

81. Fiscal Year (33–34): 79
82. Third (35): 2

BLM COST

83. Method (36):
84. Material (37–41): 2500
85. Contract (42–47): 12000

CONTRIBUTED COST

86. Material (48–52):
87. Labor/Equipment (53–57):

MAINTENANCE

88. Responsibility (58):
89. Cycle (59–61):

III – JOB DETAILS AND BENEFITS — Card 3

37. Primary Job Objective (11):

PLANT AND PEST CONTROL

39. Chemical (12):
42. Method (13):
45. Mechanical – Method (14):

ARTIFICIAL REVEGETATION

47. Pounds Seed/Acre (15–17):
48. Seedlings/Acre (18–21):
49. Method (22):
51. AUM's Livestock Forage Added (23–26):
52. Future SSF (27–28):

WATERSHED TILLAGE

54. Method (29):

FACILITIES

55. Type (30):
56. Other Misc. (31):

WATER DEVELOPMENT/CONTROL

59. Structure Type (32):
STORAGE (Ac. Ft.) 60. Flood (33–38):
61. Silt (39–44):

WILDLIFE HABITAT DEVELOPMENT PROTECTION

62. Type (45–46): 24
63. Primary Species (47–49): 106
64. Animal Months (50–54): 300
65. Number Increase (55–59): 25
66. Pounds Fish Increase (60–64):
67. Rare Endangered (65):

VISITOR DAYS ADDED

68. Fisherman (66–69):
69. Hunter (70–73):
70. Other (74–77):

IV – PROGRESS REPORT — Card 4

COMPLETION DATA

UNITS 90. Primary (11–16):
91. Secondary (17–21):
TIME 92. Fiscal Year (22–23):
93. Third (24):
94. Contract No. (25–29): CT

CONTRIBUTION DETAIL

95. Agreement (30):
96. Participant (31):
97. Contributor's Name (32–51):

CONTRIBUTIONS

98. Deposited (52–56):
Undeposited
99. Materials (57–61):
100. Labor/Equipment (62–66):

V – DETAIL ESTIMATE OF UNITS AND COSTS

WORK DESCRIPTION AND MATERIALS (a)	UNITS: EA MILE ETC (b)	UNITS: COST (c)	BLM COSTS: MATERIALS (d)	BLM COSTS: CONTRACT (e)	COOPERATOR COSTS: MATERIALS (f)	COOPERATOR COSTS: LABOR (g)
Contract for drilling 300-400 ft. well	1 ea.	12,000		12,000		
Windmill (pump, tower, water trough, labor for construction		2,500	2,500			
TOTALS Materials			2,500.00			
Labor/Equipment				12,000.00		

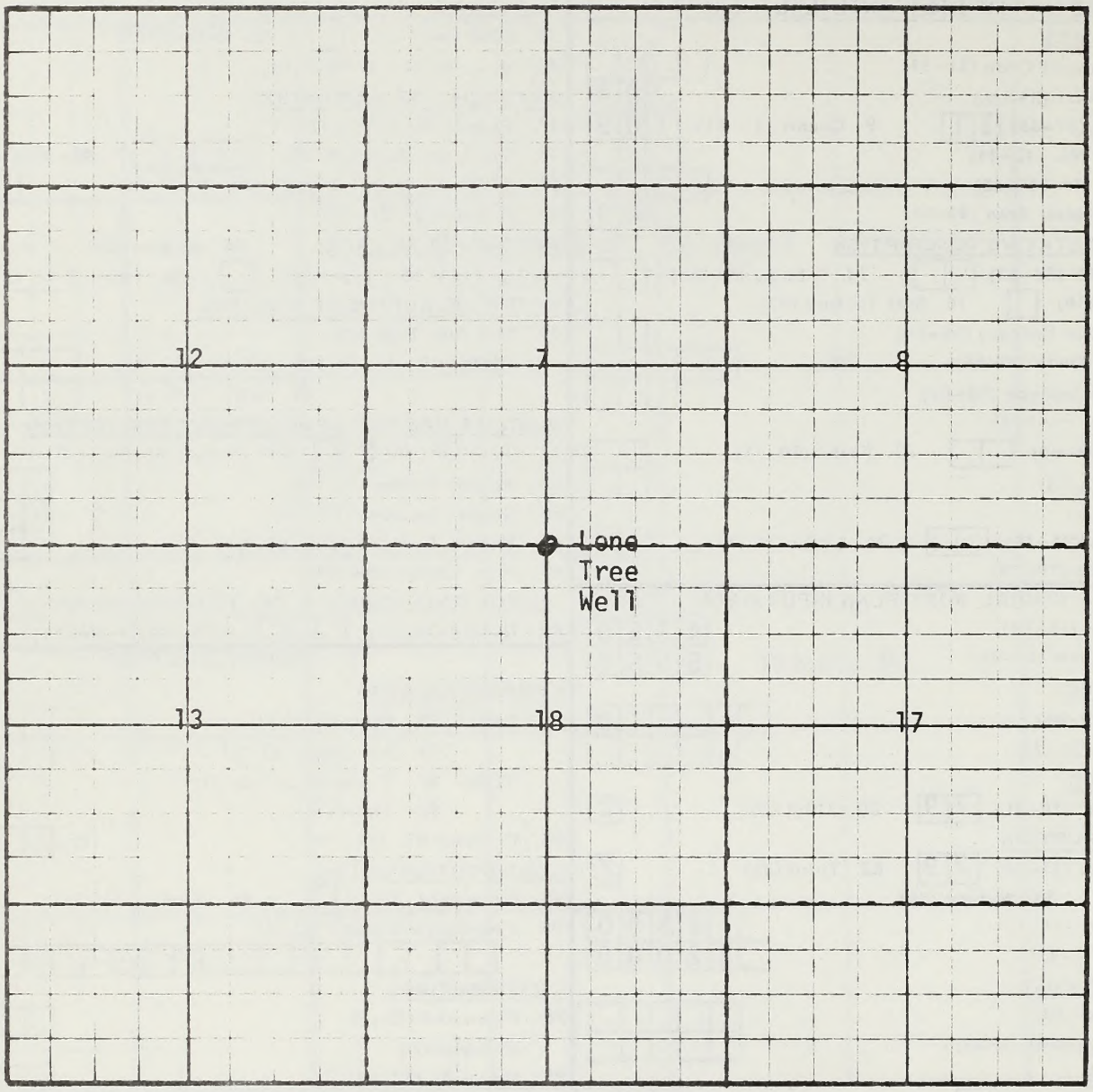
Form 1630-8 (February 1977)

JOB IDENTIFICATION STATE C 0 DISTRICT 0 5 JOB NUMBER

VI – LOCATION PLAT

Scale 1 inch = ½ mile

T. 4 5 N R. 0 6 E Meridian N M P M



VII – NARRATIVE DESCRIPTION OR JUSTIFICATION

Prepared by J. S. HANNAN Title RANGE CONSERVATIONIST Date 12/12/77

Approved by Title Date

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

JOB DOCUMENTATION REPORT

I – GENERAL DESCRIPTION (Card 1)

5. Job Name (11–30): TRICKLE MT FENCE

LOCATION CODES

6. Special Project Code (31–34):
7. Planning Unit (35–36): 04
8. Sub-Basin (37–38): 31
9. County (39–41): 109
10. Watershed No. (42–44):
11. Allotment No. (45–48):
12. Wildlife Habitat Area (49–51): 03

SITE AND VEGETATIVE DESCRIPTION

13. Present SSF (52–53):
14. % Slope (54–55):
15. Exposure (56):
16. Soil Texture (57):
17. Precipitation (inches) (58–59):
18. Elevation (feet) (60–64):
19. Vegetative Subtype (65–67):

COMPOSITION (Percent)

20. Grasses (68–69):
21. Forbs (70–71):
22. Browse (72–73):

COVER (Percent)

23. Vegetative (74–75):
24. Litter (76–77):
25. Bare Ground (78–79):

II – ANNUAL WORK PLAN INPUT DATA (Card 2)

75. Subactivity (H 14): 4350
76. Work Job Code (15–18): 5560

UNITS PLANNED

77. Primary (19–24): 1.5
78. Secondary (25–29):

TIME OF AWARD

79. Fiscal Year (30–31): 79
80. Third (32): 3

TIME OF COMPLETION

81. Fiscal Year (33–34): 79
82. Third (35): 3

BLM COST

83. Method (36): 1
84. Material (37–41): 1500
85. Contract (42–47): 1800

CONTRIBUTED COST

86. Material (48–52):
87. Labor Equipment (53–57):

MAINTENANCE

88. Responsibility (58): 1
89. Cycle (59–61): 905

JOB IDENTIFICATION

1. State (2–3): CO
2. District (4–5): 05
3. Job No. (6–9):
4. Transaction Code (10): 1

III – JOB DETAILS AND BENEFITS (Card 3)

37. Primary Job Objective (11): 7

PLANT AND PEST CONTROL

39. Chemical (12):
42. Method (13):
45. Mechanical – Method (14):

ARTIFICIAL REVEGETATION

47. Pounds Seed/Acre (15–17):
48. Seedlings/Acre (18–21):
49. Method (22):
51. AUM's Livestock Forage Added (23–26):
52. Future SSF (27–28):

WATERSHED TILLAGE

54. Method (29):

FACILITIES

55. Type (30):
56. Other Misc. (31):

WATER DEVELOPMENT/CONTROL

59. Structure Type (32):
STORAGE (Ac. Ft.) 60. Flood (33–38):
61. Silt (39–44):

WILDLIFE HABITAT DEVELOPMENT/PROTECTION

62. Type (45–46): 21
63. Primary Species (47–49): 106
64. Animal Months (50–54): 700
65. Number Increase (55–59): 70
66. Pounds Fish Increase (60–64):
67. Rare Endangered (65):

VISITOR DAYS ADDED

68. Fisherman (66–69):
69. Hunter (70–73):
70. Other (74–77):

IV – PROGRESS REPORT (Card 4)

COMPLETION DATA

UNITS 90. Primary (11–16):
91. Secondary (17–21):
TIME 92. Fiscal Year (22–23):
93. Third (24):
94. Contract No. (25–29): CT

CONTRIBUTION DETAIL

95. Agreement (30):
96. Participant (31):
97. Contributor's Name (32–51):

CONTRIBUTIONS

98. Deposited (52–56):
Undeposited
99. Materials (57–61):
100. Labor/Equipment (62–66):

V – DETAIL ESTIMATE OF UNITS AND COSTS

WORK DESCRIPTION AND MATERIALS (a)	UNITS: EA MILE ETC (b)	UNITS: COST (c)	BLM COSTS: MATERIALS (d)	BLM COSTS: CONTRACT (e)	COOPERATOR COSTS: MATERIALS (f)	COOPERATOR COSTS: LABOR (g)
Wire, posts, stays, clips, nails, etc.		1,000/mi	1500.00			
Contract (Labor)		1,200/mi		1800.00		
TOTALS Materials			1500.00			
Labor/Equipment				1800.00		

Form 1-30-8 (February 197)

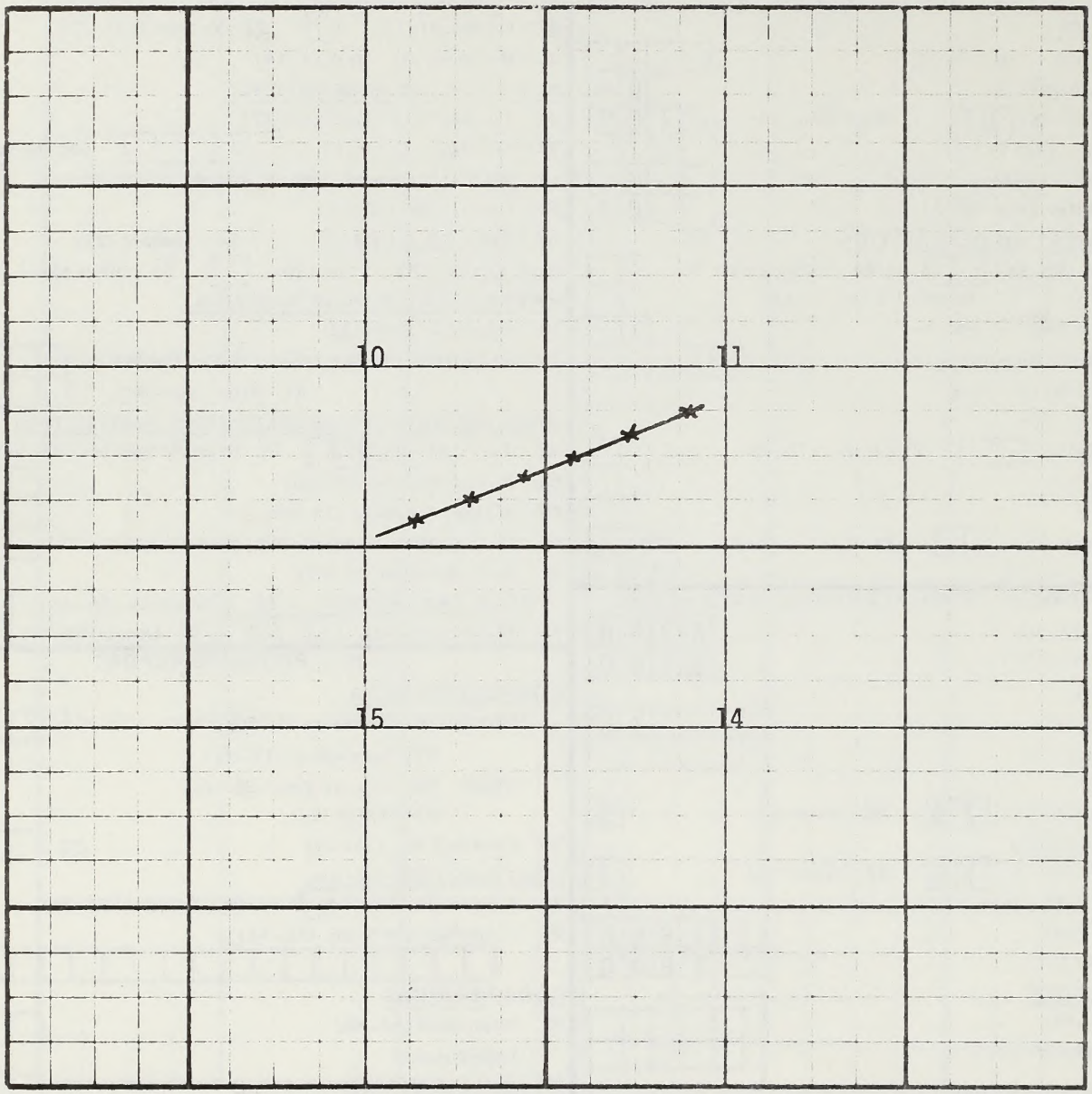
JOB IDENTIFICATION STATE C 0 DISTRICT 0 5 JOB NUMBER

VI – LOCATION PLAT

T. 4 5 N R. 0 5 E

Scale 1 inch ½ mile

Meridian N M P M



VII – NARRATIVE DESCRIPTION OR JUSTIFICATION

Fence will be "E" type
3 - strand barbed wire.
Trickle Mt. Quad.

Prepared by J. S. HANNON Title RANGE CONSERVATIONIST Date 11/29/77

Approved by Title Date

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

JOB DOCUMENTATION REPORT

JOB IDENTIFICATION
1. State (2–3) . . . C0
2. District (4–5) . . . 05
3. Job No. (6–9) . . .
4. Transaction Code (10) . . . 1

I – GENERAL DESCRIPTION — Card 1

5. Job Name (11–30) PROSPECT RESERVOIR

LOCATION CODES
6. Special Project Code (31–34) . . .
7. Planning Unit (35–36) . . . 04
8. Sub-Basin (37–38) 31 — 9. County (39–41) 109
10. Watershed No. (42–44) . . .
11. Allotment No. (45–48) . . .
12. Wildlife Habitat Area (49–51) . . .

SITE AND VEGETATIVE DESCRIPTION
13. Present SSF (52–53) . . . 14. % Slope (54–55) . . .
15. Exposure (56) . . . 16. Soil Texture (57) . . .
17. Precipitation (inches) (58–59) . . .
18. Elevation (feet) (60–64) . . .
19. Vegetative Subtype (65–67) . . .

COMPOSITION (Percent)
20. Grasses (68–69) . . . 21. Forbs (70–71) . . .
22. Browse (72–73) . . .

COVER (Percent)
23. Vegetative (74–75) . . . 24. Litter (76–77) . . .
25. Bare Ground (78–79) . . .

II – ANNUAL WORK PLAN INPUT DATA — Card 2

75. Subactivity (11–14) . . . 4350
76. Work Job Code (15–18) . . . 5557

UNITS PLANNED
77. Primary (19–24) . . . 1.0
78. Secondary (25–29) . . .

TIME OF AWARD
79. Fiscal Year (30–31) 80 — 80. Third (32) . . . 3

TIME OF COMPLETION
81. Fiscal Year (33–34) 80 — 82. Third (35) . . . 3

BLM COST — 83. Method (36) . . .
84. Material (37–41) . . .
85. Contract (42–47) . . . 2900

CONTRIBUTED COST
86. Material (48–52) . . .
87. Labor/Equipment (53–57) . . .

MAINTENANCE
88. Responsibility (58) 1 — 89. Cycle (59–61) 003

III – JOB DETAILS AND BENEFITS — Card 3

37. Primary Job Objective (11) . . . 7

PLANT AND PEST CONTROL
39. Chemical (12) . . . 42. Method (13) . . .
45. Mechanical – Method (14) . . .

ARTIFICIAL REVEGETATION
47. Pounds Seed/Acre (15–17) . . .
48. Seedlings/Acre (18–21) . . . 49. Method (22) . . .
51. AUM's Livestock Forage Added (23–26) . . .
52. Future SSF (27–28) . . .

WATERSHED TILLAGE — 54. Method (29) . . .

FACILITIES 55. Type (30) . . . 56. Other Misc. (31) . . .

WATER DEVELOPMENT CONTROL
59. Structure Type (32) . . .
STORAGE (Ac. Ft.) 60. Flood (33–38) . . .
61. Silt (39–44) . . .

WILDLIFE HABITAT DEVELOPMENT PROTECTION
62. Type (45–46) 24 — 63. Primary Species (47–49) 106
64. Animal Months (50–54) . . . 300
65. Number Increase (55–59) . . . 25
66. Pounds Fish Increase (60–64) . . .
67. Rare/Endangered (65) . . .

VISITOR DAYS ADDED — 68. Fisherman (66–69) . . .
69. Hunter (70–73) . . . 70. Other (74–77) . . .

IV – PROGRESS REPORT — Card 4

COMPLETION DATA
UNITS 90. Primary (11–16) . . .
91. Secondary (17–21) . . .
TIME 92. Fiscal Year (22–23) . . .
93. Third (24) . . .
94. Contract No. (25–29) . . . CT . . .

CONTRIBUTION DETAIL
95. Agreement (30) . . . 96. Participant (31) . . .
97. Contributor's Name (32–51) . . .

CONTRIBUTIONS
98. Deposited (52–56) . . .
Undeposited
99. Materials (57–61) . . .
100. Labor/Equipment (62–66) . . .

V – DETAIL ESTIMATE OF UNITS AND COSTS

WORK DESCRIPTION AND MATERIALS (a)	UNITS: EA MILE, ETC (b)	UNITS: COST (c)	BLM COSTS: MATERIALS (d)	BLM COSTS: CONTRACT (e)	COOPERATOR COSTS: MATERIALS (f)	COOPERATOR COSTS: LABOR (g)
Caterpillar for construction of reservoir	3,800 yd^3	.60/yd		2,280.00		
Bentonite hauling, spreading, disking	25 yd^3	23.00/yd^3		575.00		
TOTALS Materials						
Labor/Equipment				2,855.00		

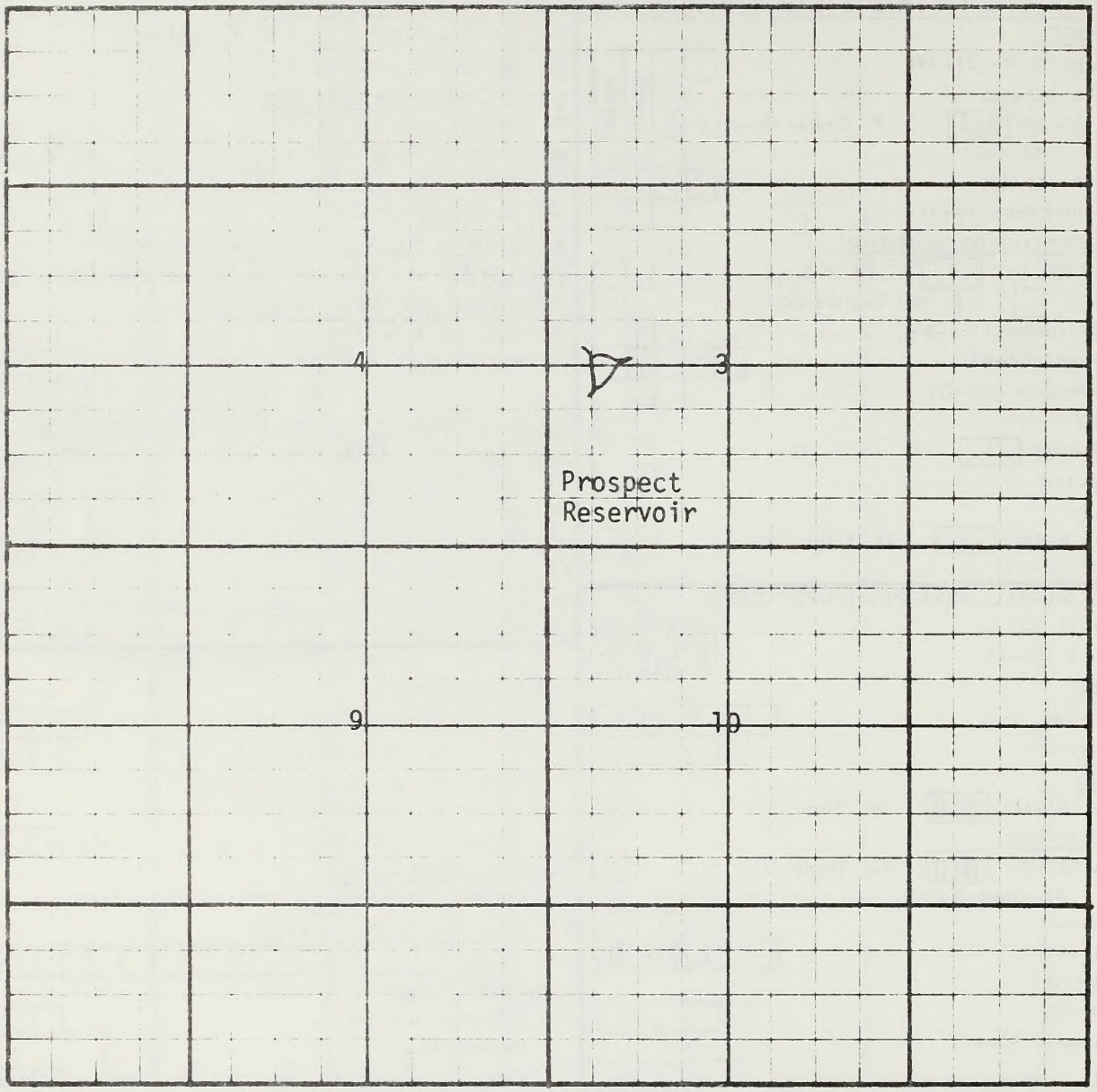
Form 1630-8 (February 1977)

JOB IDENTIFICATION STATE C O DISTRICT 0 5 CONTRACTOR

VI – LOCATION PLAT

Scale 1 inch ½ mile

T 4 5 N R 0 5 E Meridian N M P M



VII – NARRATIVE DESCRIPTION OR JUSTIFICATION

Trickle Mt. Quad.
Estimated specs: Base = 50 ft, Height = 15 ft, top width = 10 ft, length = 250 ft, Est. volume of fill 3800 yds^3
3:1 slope upstream 2:1 downstream

Prepared by J. S. HANNAN Title RANGE CONSERVATIONIST Date 11/29/77

Approved by Title Date

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

JOB DOCUMENTATION REPORT

I – GENERAL DESCRIPTION (Card 1)

5. Job Name (11–30): TRICKLE SPRING EXCL

LOCATION CODES

6. Special Project Code (31–34)
7. Planning Unit (35–36): 04
8. Sub-Basin (37–38): 31
9. County (39–41): 109
10. Watershed No. (42–44)
11. Allotment No. (45–48)
12. Wildlife Habitat Area (49–51)

SITE AND VEGETATIVE DESCRIPTION

13. Present SSF (52–53)
14. Slope (54–55)
15. Exposure (56)
16. Soil Texture (57)
17. Precipitation (inches) (58–59)
18. Elevation (feet) (60–61)
19. Vegetative Subtype (65–67)

COMPOSITION (Percent)

20. Grasses (68–69)
21. Forbs (70–71)
22. Browse (72–73)

COVER (Percent)

23. Vegetative (74–75)
24. Litter (76–77)
25. Bare Ground (78–79)

II – ANNUAL WORK PLAN INPUT DATA (Card 2)

75. Subactivity (11–14): 4350
76. Work Job Code (15–18): 5560

UNITS PLANNED

77. Primary (19–24): 0.7
78. Secondary (25–29)

TIME OF AWARD

79. Fiscal Year (30–31): 80
80. Third (32): 2

TIME OF COMPLETION

81. Fiscal Year (33–34): 80
82. Third (35): 2

BLM COST

83. Method (36)
84. Material (37–41): 900
85. Contract (42–47): 800

CONTRIBUTED COST

86. Material (48–52)
87. Labor/Equipment (53–57)

MAINTENANCE

88. Responsibility (58): 1
89. Cycle (59–61): 005

JOB IDENTIFICATION

1. State (2–3): CO
2. District (4–5): 05
3. Job No. (6–9)
4. Transaction Code (10): 1

III – JOB DETAILS AND BENEFITS (Card 3)

37. Primary Job Objective (11): 7

PLANT AND PEST CONTROL

39. Chemical (12)
42. Method (13)
45. Mechanical – Method (14)

ARTIFICIAL REVEGETATION

47. Pounds Seed/Acre (15–17)
48. Seedlings/Acre (18–21)
49. Method (22)
51. AUM's Livestock Forage Added (23–26)
52. Future SSF (27–28)

WATERSHED TILLAGE

54. Method (29)

FACILITIES

55. Type (30)
56. Other Misc. (31)

WATER DEVELOPMENT CONTROL

59. Structure Type (32)

STORAGE (Ac. Ft.)

60. Flood (33–38)
61. Silt (39–44)

WILDLIFE HABITAT DEVELOPMENT/PROTECTION

62. Type (45–46): 23
63. Primary Species (47–49): 405
64. Animal Months (50–54): 100
65. Number Increase (55–59): 50
66. Pounds Fish Increase (60–64)
67. Rare/Endangered (65)

VISITOR DAYS ADDED

68. Fisherman (66–69)
69. Hunter (70–73)
70. Other (74–77)

IV – PROGRESS REPORT (Card 4)

COMPLETION DATA

UNITS
90. Primary (11–16)
91. Secondary (17–21)

TIME
92. Fiscal Year (22–23)
93. Third (24)

94. Contract No. (25–29) CT

CONTRIBUTION DETAIL

95. Agreement (30)
96. Participant (31)
97. Contributor's Name (32–51)

CONTRIBUTIONS

98. Deposited (52–56)

Undeposited

99. Materials (57–61)
100. Labor/Equipment (62–66)

V – DETAIL ESTIMATE OF UNITS AND COSTS

WORK DESCRIPTION AND MATERIALS (a)	UNITS: EA MILE, ETC (b)	UNITS: COST (c)	BLM COSTS: MATERIALS (d)	BLM COSTS: CONTRACT (e)	COOPERATOR COSTS: MATERIALS (f)	COOPERATOR COSTS: LABOR (g)
Barbed Wire	7 rolls	30/roll	210.00			
Juniper Posts	140 ea	2.50/ea	350.00			
Steel Posts	126 ea	2.00/ea	252.00			
Twisted Wire Stays	130 ea	10¢/ea	13.00			
Misc. materials (smooth wire nails, staples.)	----------	----------	50.00			
Labor	7 enclosures	120.00 ea		840.00		
TOTALS Materials			875.00			
Labor Equipment				840.00		

Form 1070-8 (February 1977)

JOB IDENTIFICATION STATE C 0 DISTRICT 0 5 JOB NUMBER

VI - LOCATION PLAT

Scale 1 inch

T. R. Meridian

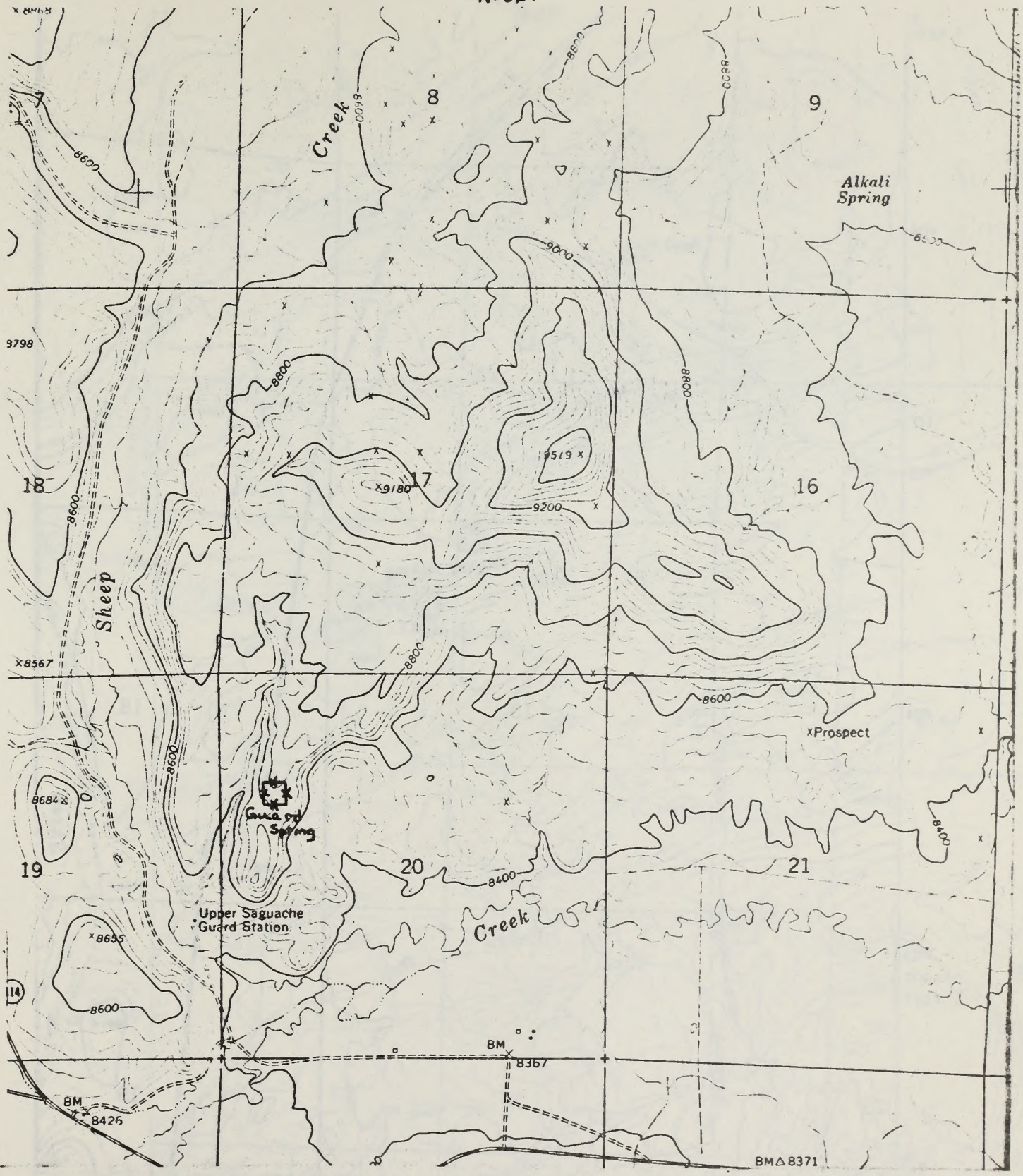
VII – NARRATIVE DESCRIPTION OR JUSTIFICATION

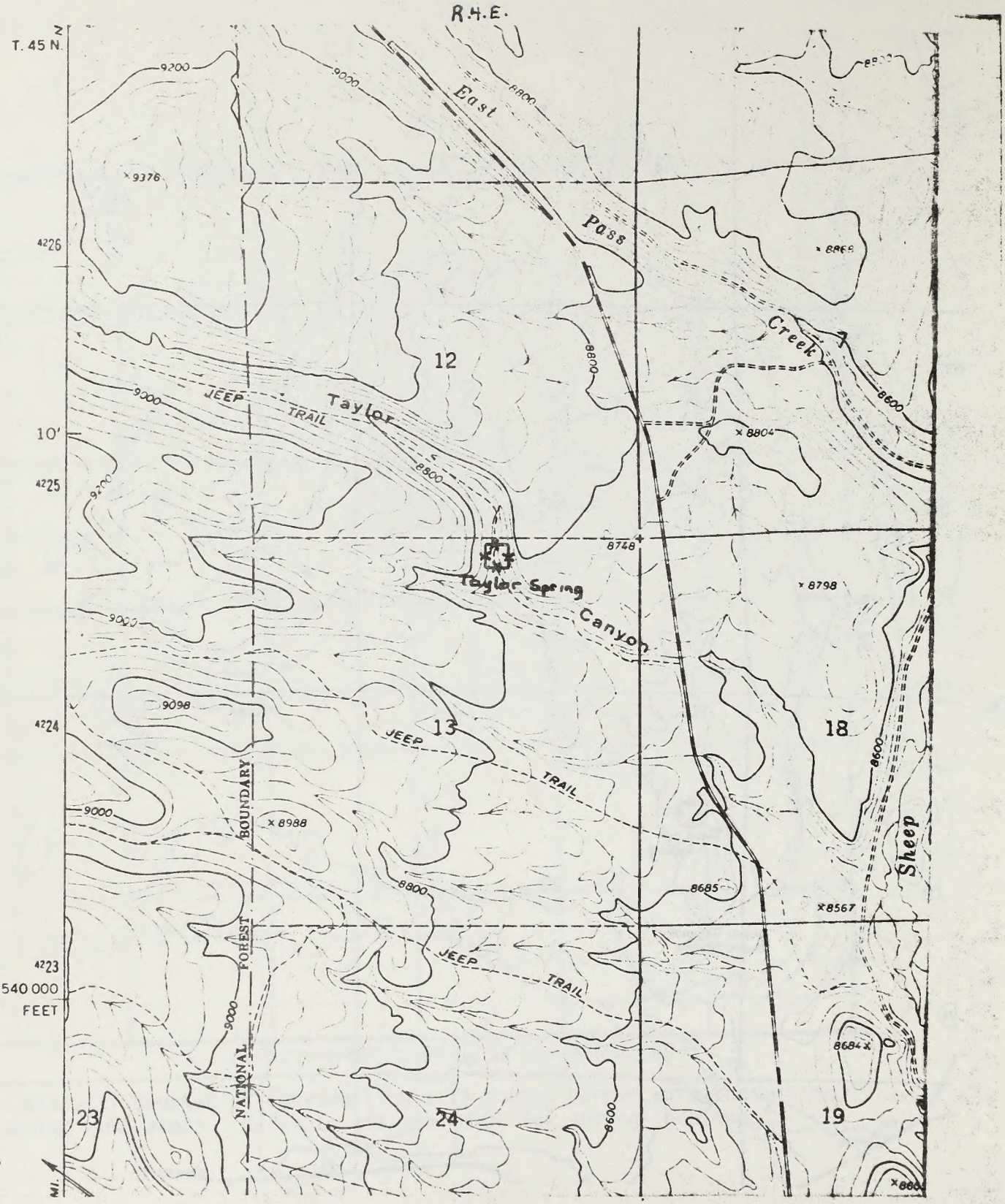
Project will consist of construction of 4-strand barbed wire fence around 7 spring sump areas. Refer to attached maps for spring locations.

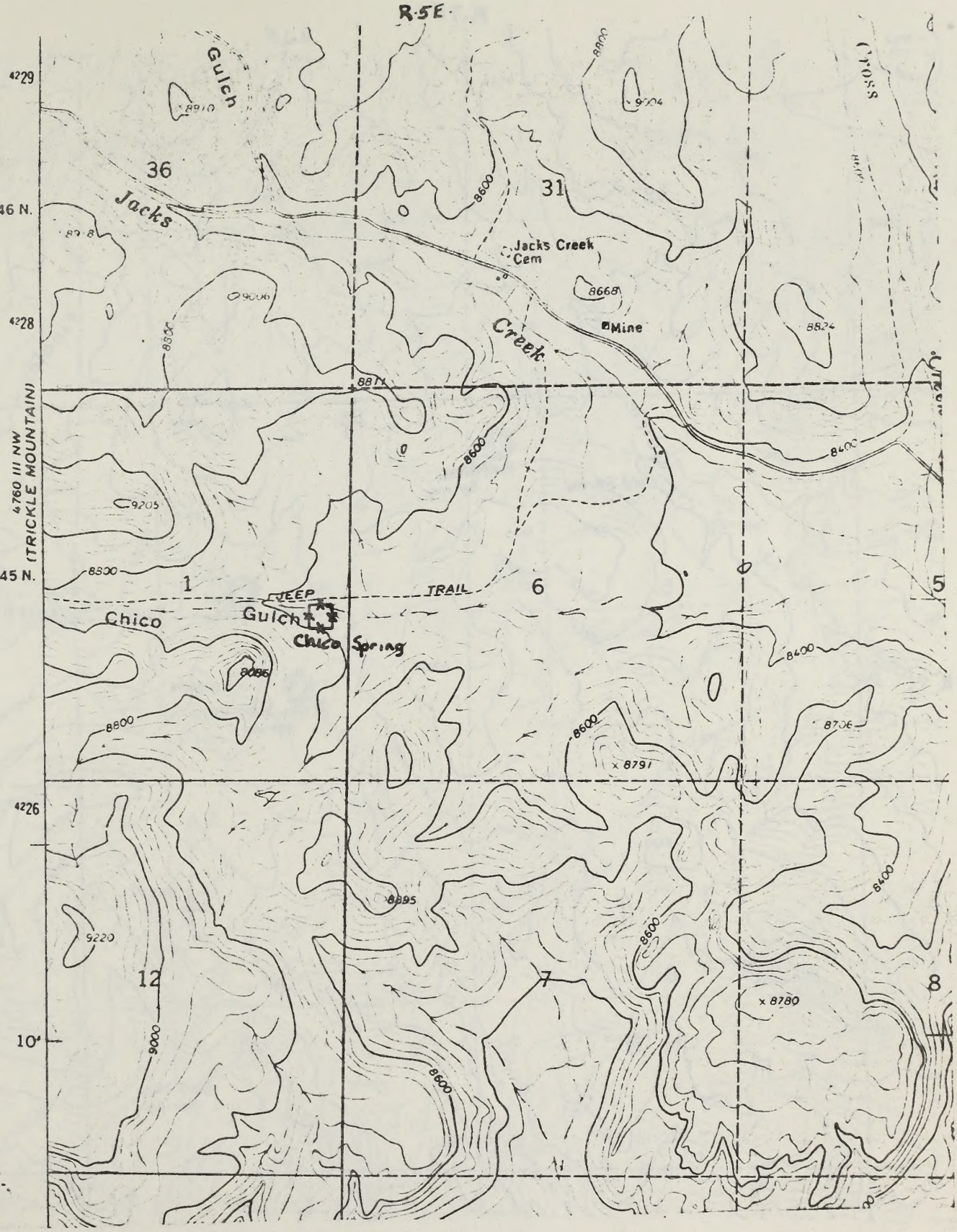
Prepared by	Title	Date
J. S. HANNAN	RANGE CONSERVATIONIST	11/30/77
Approved by	Title	Date

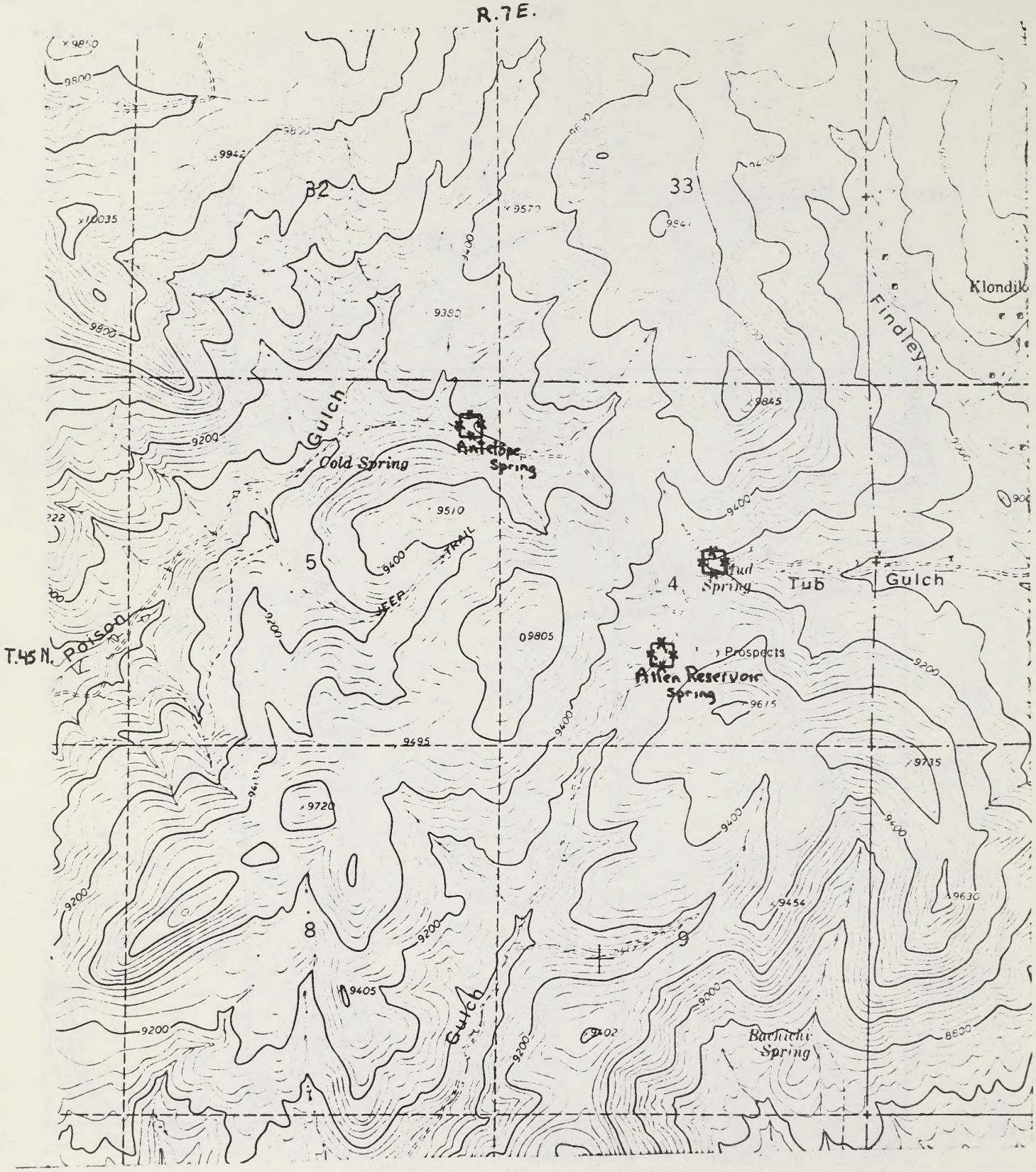
R. 5E.

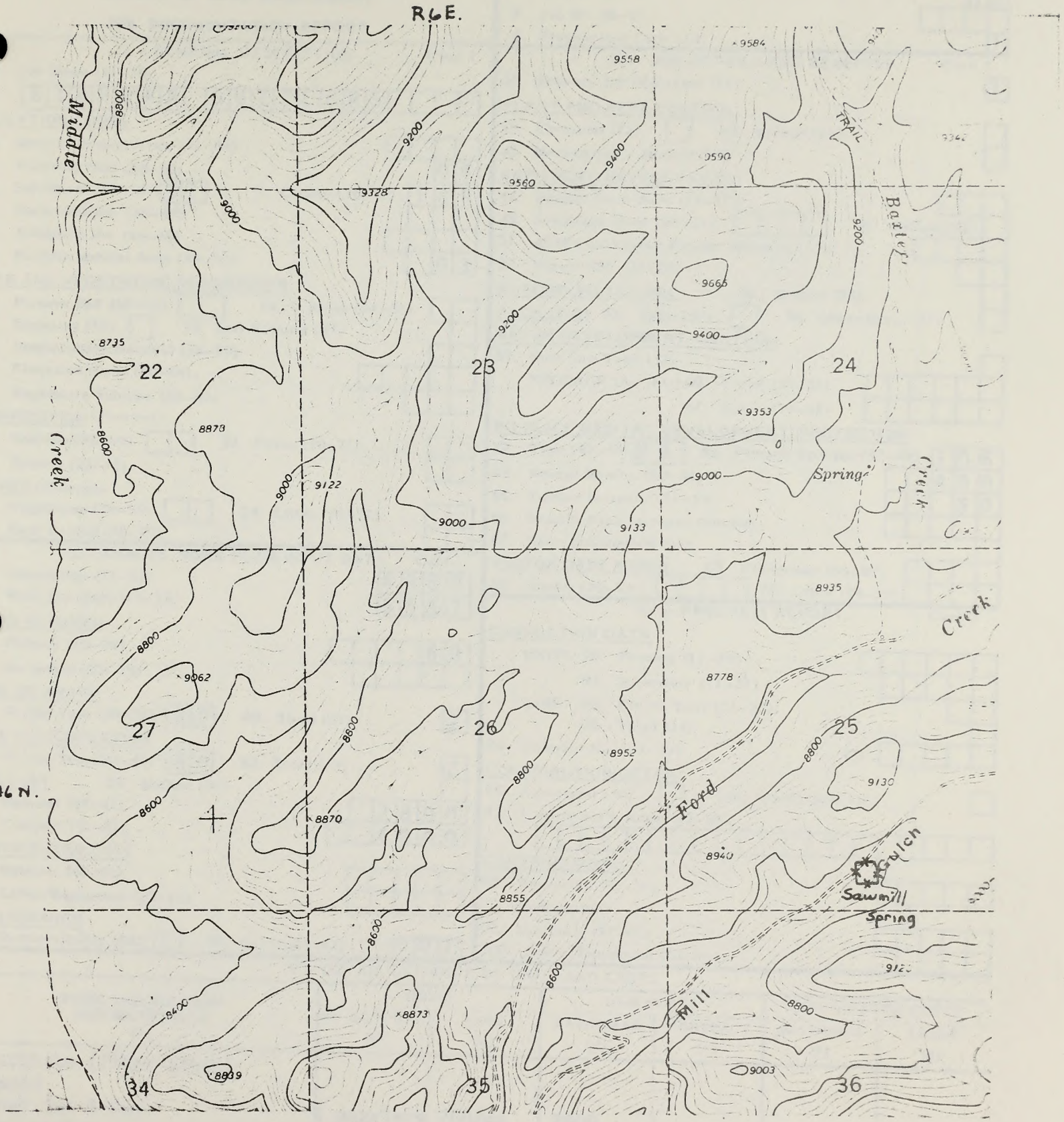
15 N.


Creek
8
9
Alkali Spring
9798
8800
9000
9519
9180
17
18
16
9200
Sheep
8567
8600
Prospect
8684
Guard Spring
19
20
21
8400
Upper Saguache Guard Station
Creek
8655
114
BM
8367
BM
8426
BM△8371


R.4.E.
T. 45 N.
N
4226
10'
4225
4224
4223
540 000
FEET
MI.
East
Pass
Creek
Taylor
Canyon
Taylor Spring
JEEP TRAIL
JEEP TRAIL
JEEP TRAIL
NATIONAL FOREST BOUNDARY
Sheep
12
13
18
19
23
24
9200
9000
8800
8600
9376
8865
8804
8748
8798
9098
8988
8685
8567
8684
8600


R.5E.
4229
T. 46 N.
4228
4760 III NW
(TRICKLE MOUNTAIN)
T. 45 N.
4226
10'
Gulch
Jacks
Creek
Jacks Creek
Cem
Mine
JEEP
TRAIL
Chico
Gulch
Chico Spring
36
31
1
6
5
12
7
8
8600
8400
8800
9000
9205
9220
8668
8824
8791
8780
8706
8895
8886
8810
9004


R.7E.
T.45 N.
32
33
5
4
8
9
Gulch
Cold Spring
Antelope Spring
Tub
Gulch
Findley
Klondike
Prospects
Allen Reservoir Spring
Poison
Gulch
Bachelor Spring
JEEP
TRAIL
9942
10035
9800
9570
9380
9845
9200
9510
9400
9805
9615
9495
9720
9735
9630
9454
9405
9402
8500


R.6E.
T.46 N.
Middle
Creek
Barker
Creek
Spring
Creek
Ford
Mill
Gulch
Sawmill
Spring
TRAIL
22
23
24
25
26
27
34
35
36
9558
9584
9590
9328
9560
9665
9353
9122
9133
8935
8778
8952
9130
8940
8855
8873
9003
8735
8878
9062
8870
8939
9200
9400
9000
8800
8600
8400

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

JOB DOCUMENTATION REPORT

JOB IDENTIFICATION

1. State (2–3) . . . . . C 0
2. District (4–5) 0 5
3. Job No. (6–9) . . . . . [ ]
4. Transaction Code (10) 1

I – GENERAL DESCRIPTION — Card 1

5. Job Name (11–30) BIGHORN GUZZLERS

LOCATION CODES

6. Special Project Code (31–34) . . . . . [ ]
7. Planning Unit (35–36) 0 4
8. Sub-Basin (37–38) 3 1 — 9. County (39–41) 1 0 9
10. Watershed No. (42–44) . . . . . [ ]
11. Allotment No. (45–48) . . . . . [ ]
12. Wildlife Habitat Area (49–51) 0 3

SITE AND VEGETATIVE DESCRIPTION

13. Present SSF (52–53) [ ] — 14. % Slope (54–55) [ ]
15. Exposure (56) [ ] — 16. Soil Texture (57) . . . . [ ]
17. Precipitation (inches) (58–59) . . . . . [ ]
18. Elevation (feet) (60–64) . . . . . [ ]
19. Vegetative Subtype (65–67) . . . . . [ ]

COMPOSITION (Percent)

20. Grasses (68–69) [ ] — 21. Forbs (70–71) . . [ ]
22. Browse (72–73) . . . . . [ ]

COVER (Percent)

23. Vegetative (74–75) [ ] — 24. Litter (76–77) . [ ]
25. Bare Ground (78–79) . . . . . [ ]

II – ANNUAL WORK PLAN INPUT DATA — Card 2

75. Subactivity (11–14) 4 3 5 0
76. Work Job Code (15–18) 5 5 5 7

UNITS PLANNED

77. Primary (19–24) 6.0
78. Secondary (25–29) . . . . . [ ]

TIME OF AWARD

79. Fiscal Year (30–31) 8 0 — 80. Third (32) . . . 2

TIME OF COMPLETION

81. Fiscal Year (33–34) 8 0 — 82. Third (35) . . . 2

BLM COST — 83. Method (36) . . . . . [ ]

84. Material (37–41) 2 8 0 0
85. Contract (42–47) 4 0 0 0

CONTRIBUTED COST

86. Material (48–52) . . . . . [ ]
87. Labor/Equipment (53–57) . . . . . [ ]

MAINTENANCE

88. Responsibility (58) 1 — 89. Cycle (59–61) 0 0 1

III – JOB DETAILS AND BENEFITS — Card 3

37. Primary Job Objective (11) 7

PLANT AND PEST CONTROL

39. Chemical (12) [ ] — 42. Method (13) . . . [ ]
45. Mechanical – Method (14) . . . . . [ ]

ARTIFICIAL REVEGETATION

47. Pounds Seed/Acre (15–17) . . . . . [ ]
48. Seedlings/Acre (18–21) [ ] — 49. Method (22) [ ]
51. AUM's Livestock Forage Added (23–26) . . [ ]
52. Future SSF (27–28) . . . . . [ ]

WATERSHED TILLAGE — 54. Method (29) . . . . [ ]

FACILITIES 55. Type (30) [ ] — 56. Other Misc. (31) [ ]

WATER DEVELOPMENT CONTROL

59. Structure Type (32) . . . . . [ ]
STORAGE (Ac. Ft.) 60. Flood (33–38) [ ]
61. Silt (39–44) [ ]

WILDLIFE HABITAT DEVELOPMENT PROTECTION

62. Type (45–46) 2 4 — 63. Primary Species (47–49) 1 0 6
64. Animal Months (50–54) 4 0 0
65. Number Increase (55–59) 5 0
66. Pounds Fish Increase (60–64) . . . . . [ ]
67. Rare/Endangered (65) . . . . . [ ]

VISITOR DAYS ADDED — 68. Fisherman (66–69) [ ]
69. Hunter (70–73) [ ] — 70. Other (74–77) [ ]

IV – PROGRESS REPORT — Card 4

COMPLETION DATA

UNITS 90. Primary (11–16) . . . . . [ ]
91. Secondary (17–21) . . . . [ ]
TIME 92. Fiscal Year (22–23) . . . . . [ ]
93. Third (24) . . . . . [ ]
94. Contract No. (25–29) . . . . . CT [ ]

CONTRIBUTION DETAIL

95. Agreement (30) [ ] — 96. Participant (31) . . [ ]
97. Contributor's Name (32–51) [ ]

CONTRIBUTIONS

98. Deposited (52–56) . . . . . [ ]
Undeposited
99. Materials (57–61) . . . . . [ ]
100. Labor/Equipment (62–66) . . . . [ ]

V – DETAIL ESTIMATE OF UNITS AND COSTS

WORK DESCRIPTION AND MATERIALS (a)	UNITS: EA MILE, ETC (b)	UNITS: COST (c)	BLM COSTS: MATERIALS (d)	BLM COSTS: CONTRACT (e)	COOPERATOR COSTS: MATERIALS (f)	COOPERATOR COSTS: LABOR (g)
1 ascobite (fiber glass) Plywood Lumber 2x4 & 2x6 Alum. nails Misc. material	4 guzzlers	700/ea	2800			
Labor		1000.00/ea		4000.00		
TOTALS Materials			2800.00			
Labor/Equipment				4000.00		

Form 1630-8 (February 1977)

JOB IDENTIFICATION STATE C O PROJECT 0 5 JOB NUMBER

VI – LOCATION PLAT

Scale 1 inch

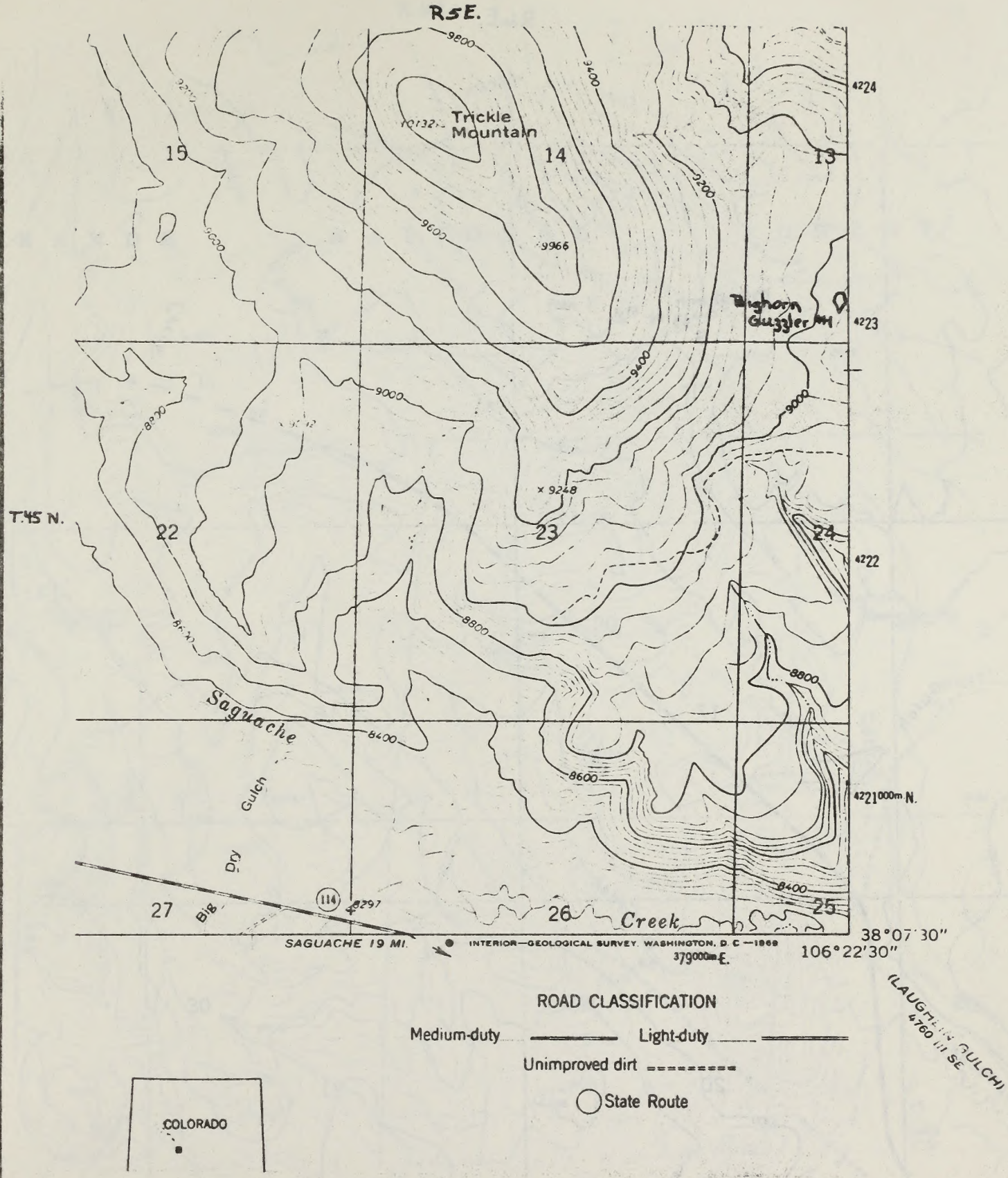
T R Section N M P M

Refer to attached maps for locations of projects.

VII – NARRATIVE DESCRIPTION OR JUSTIFICATION

Prepared by J. S. HANNAN Title RANGE CONSERVATIONIST Date

Approved by Title Date



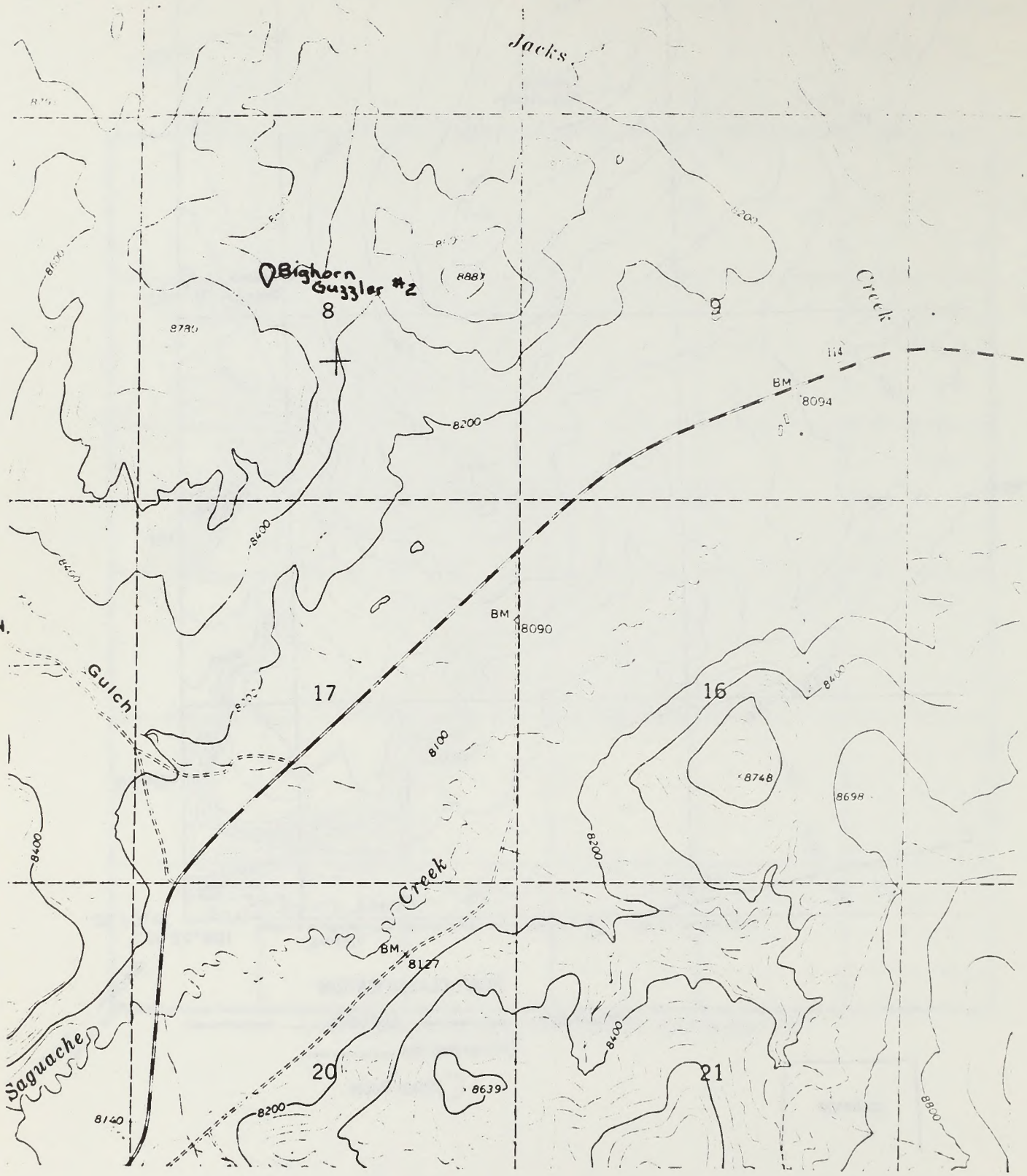
ROAD CLASSIFICATION

Medium-duty ——— Light-duty ———

Unimproved dirt - - - - - -

State Route

R.6E.


Jacks
Creek
Bighorn Guzzler #2
8
9
8887
8730
8200
8400
BM
8094
T.45N.
Gulch
17
16
BM
8090
8100
8748
8698
8200
Creek
BM
8127
Saguache
20
21
8639
8400
8200
8140
8800

R.6E.
GRANDE NATIONAL FOREST
Indian Park
Bear Creek
Creek
Bighorn Guzzler #3
Cabin Draw
T.46 N.
R6E
20
29
30
28
2
9800
9600
9400
9200
9000
8800
9750
9217
9152
9279
9370
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9220
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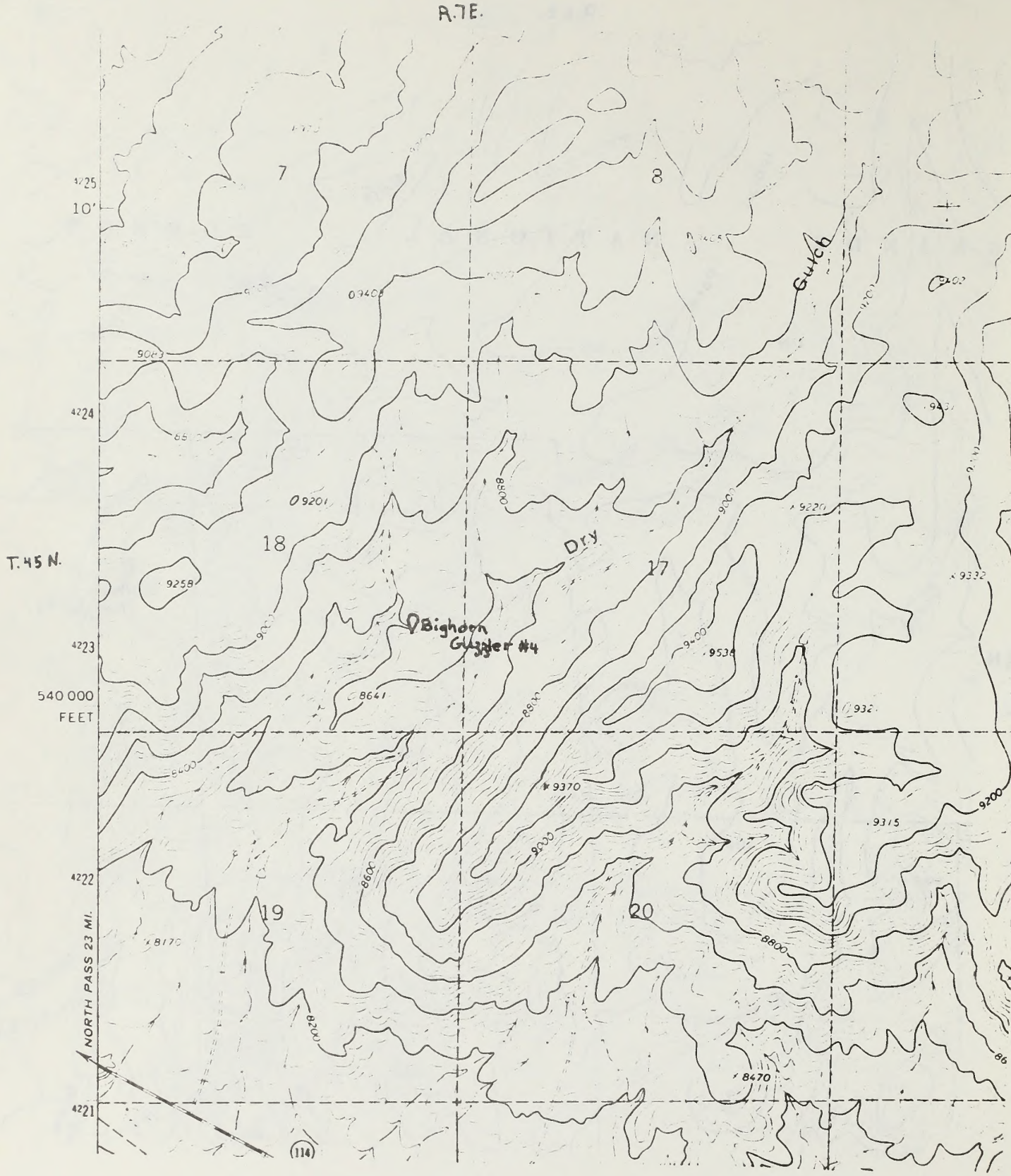
9102


R.7E.
T.45 N.
540 000
FEET
NORTH PASS 23 MI.
Dry
Gulch
Bighorn
Guzzler #4
7
8
18
17
19
20
9258
9201
9370
9315
9538
9332
8641
8170
8470
8800
9200
(114)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

JOB DOCUMENTATION REPORT

JOB IDENTIFICATION
1. State (2–3) C0
2. District (4–5) 05
3. Job No. (6–9)
4. Transaction Code (10) 1

I – GENERAL DESCRIPTION — Card 1

5. Job Name (11–30) T.M. RES. BENTONITE

LOCATION CODES
6. Special Project Code (31–34)
7. Planning Unit (35–36) 04
8. Sub-Basin (37–38) 31
9. County (39–41) 109
10. Watershed No. (42–44)
11. Allotment No. (45–48)
12. Wildlife Habitat Area (49–51) 03

SITE AND VEGETATIVE DESCRIPTION
13. Present SSF (52–53)
14. % Slope (54–55)
15. Exposure (56)
16. Soil Texture (57)
17. Precipitation (inches) (58–59)
18. Elevation (feet) (60–64)
19. Vegetative Subtype (65–67)

COMPOSITION (Percent)
20. Grasses (68–69)
21. Forbs (70–71)
22. Browse (72–73)

COVER (Percent)
23. Vegetative (74–75)
24. Litter (76–77)
25. Bare Ground (78–79)

II – ANNUAL WORK PLAN INPUT DATA — Card 2

75. Subactivity (11–14) 4350
76. Work Job Code (15–18) 5557

UNITS PLANNED
77. Primary (19–24) 4.0
78. Secondary (25–29)

TIME OF AWARD
79. Fiscal Year (30–31) 80
80. Third (32) 2

TIME OF COMPLETION
81. Fiscal Year (33–34) 80
82. Third (35) 2

BLM COST
83. Method (36)
84. Material (37–41)
85. Contract (42–47) 2800

CONTRIBUTED COST
86. Material (48–52)
87. Labor Equipment (53–57)

MAINTENANCE
88. Responsibility (58) 1
89. Cycle (59–61) 005

III – JOB DETAILS AND BENEFITS — Card 3

37. Primary Job Objective (11)

PLANT AND PEST CONTROL
39. Chemical (12)
42. Method (13)
45. Mechanical – Method (14)

ARTIFICIAL REVEGETATION
47. Pounds Seed/Acre (15–17)
48. Seedlings Acre (18–21)
49. Method (22)
51. AUM's Livestock Forage Added (23–26)
52. Future SSF (27–28)

WATERSHED TILLAGE
54. Method (29)

FACILITIES
55. Type (30)
56. Other Misc. (31)

WATER DEVELOPMENT CONTROL
59. Structure Type (32)
STORAGE (Ac. Ft.) 60. Flood (33–38)
61. Silt (39–44)

WILDLIFE HABITAT DEVELOPMENT PROTECTION
62. Type (45–46) 24
63. Primary Species (47–49) 106
64. Animal Months (50–54) 300
65. Number Increase (55–59) 25
66. Pounds Fish Increase (60–64)
67. Rare Endangered (65)

VISITOR DAYS ADDED
68. Fisherman (66–69)
69. Hunter (70–73)
70. Other (74–77)

IV – PROGRESS REPORT — Card 4

COMPLETION DATA
UNITS 90. Primary (11–16)
91. Secondary (17–21)
TIME 92. Fiscal Year (22–23)
93. Third (24)
94. Contract No. (25–29) CT

CONTRIBUTION DETAIL
95. Agreement (30)
96. Participant (31)
97. Contributor's Name (32–51)

CONTRIBUTIONS
98. Deposited (52–56)
Undeposited
99. Materials (57–61)
100. Labor Equipment (62–66)

V – DETAIL ESTIMATE OF UNITS AND COSTS

WORK DESCRIPTION AND MATERIALS (a)	UNITS: EA MILE, ETC (b)	UNITS: COST (c)	BLM COSTS: MATERIALS (d)	BLM COSTS: CONTRACT (e)	COOPERATOR COSTS: MATERIALS (f)	COOPERATOR COSTS: LABOR (g)
Bentonite Hauling, spreading, and Disking	120 yd^3	23.00 yd^3		2760.00		
TOTALS Materials				2760.00		
Labor Equipment						

Form 1530-8 (February 197[illegible])

JOB IDENTIFICATION STATE C 0 DISTRICT 0 5 JOB NUMBER

VI – LOCATION PLAT

Scale 1 inch

T. R. Section N M P M

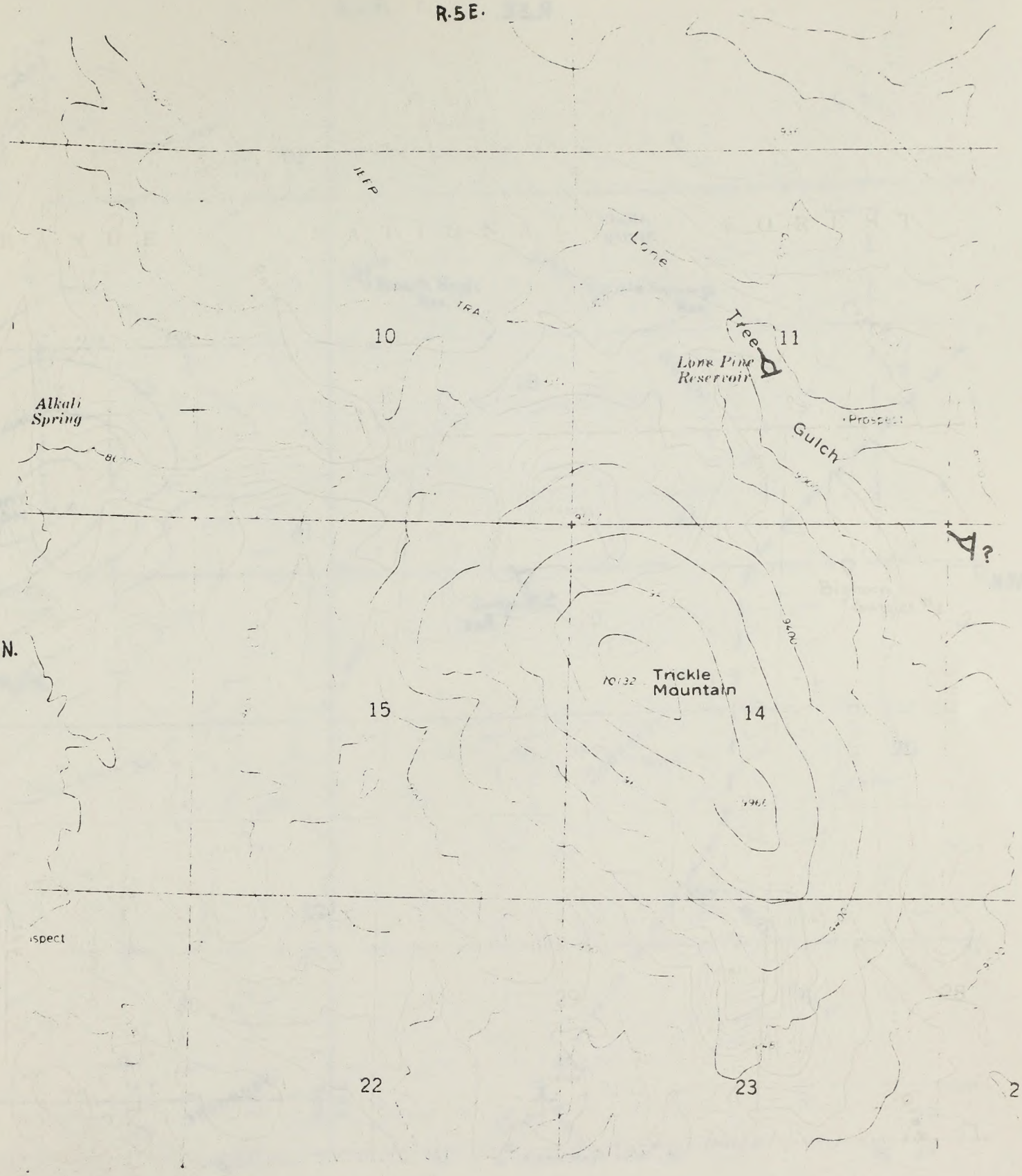
REFER TO ATTACHED MAPS

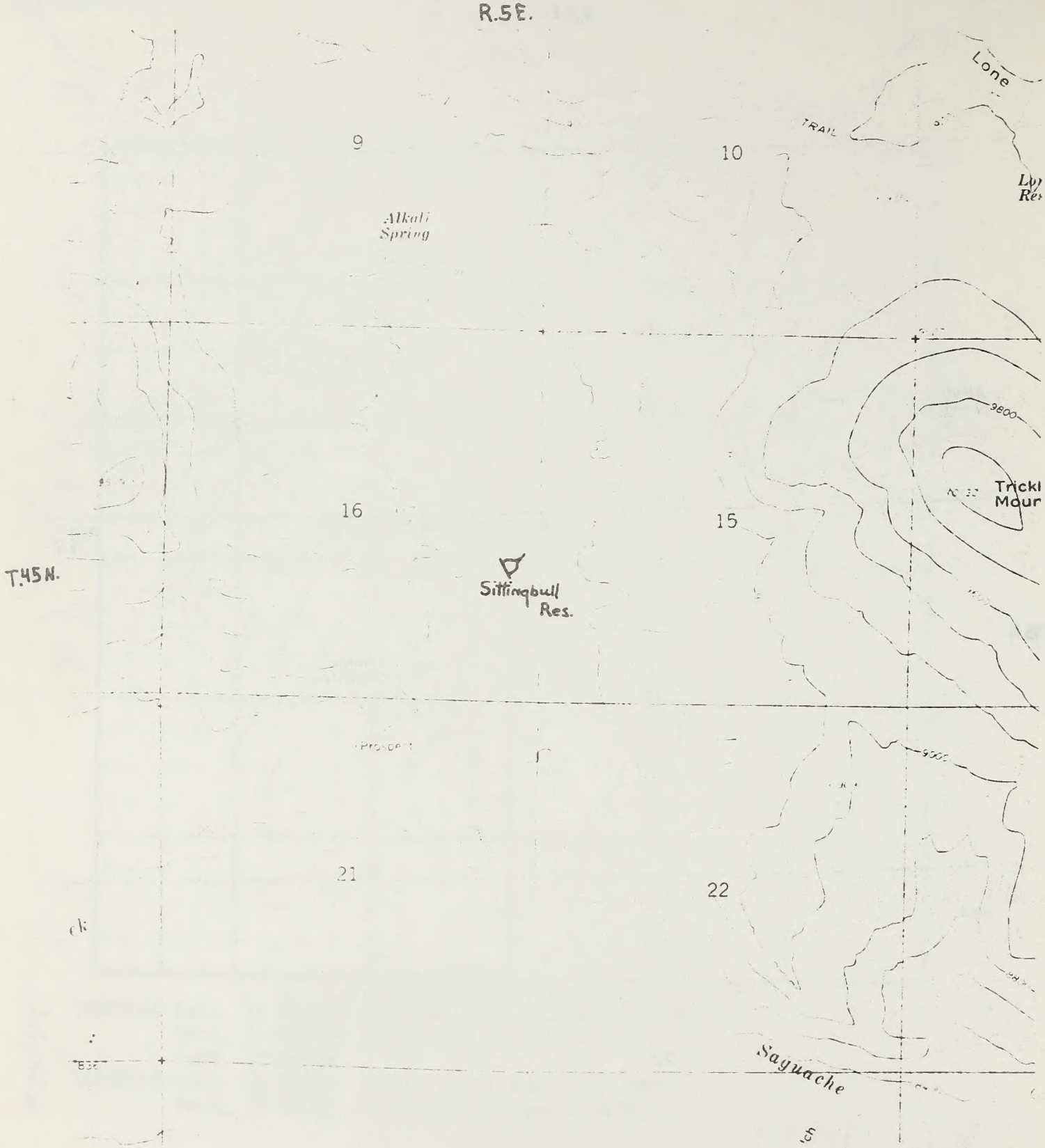
VII – NARRATIVE DESCRIPTION OR JUSTIFICATION

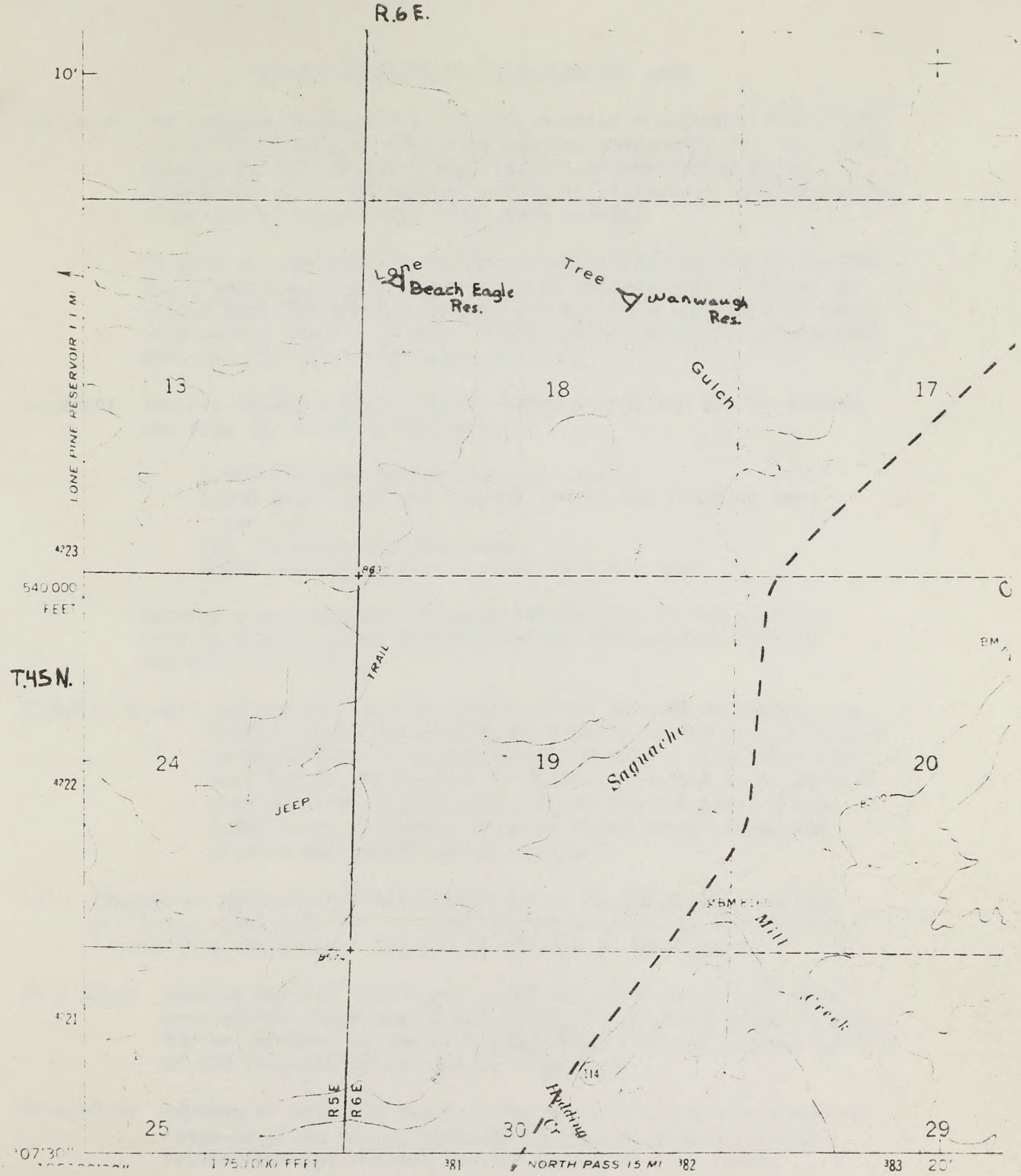
1. T45NR05E Sect. 16 NE/SE¼ (Sitting Bull Reservoir 0516)
2. Sect. 11 NE/SW¼ (Lone Pine Reservoir 0103)
3. Sect. 13 NW/NW (?)
4. T45NR06E Sect. 18 NW/NW (Beach Eagle Reservoir 0608)
5. Sect. 18 NW/NE (Wanwaugh Reservoir 0619)

Prepared by	Title	Date
J. S. HANNAN	RANGE CONSERVATIONIST	12/06/77
Approved by	Title	Date

GPO 537-264


R.5E.
T.45N.
Lone
Tree
Gulch
Lone Pine Reservoir
Alkali Spring
Prospect
Trickle Mountain
10
11
15
14
22
23
2


R.5E.
T.45N.
9
10
16
15
21
22
Alkali Spring
Sittingbull Res.
TRAIL
Lone
9800
Trickl Mour
Saguache


R.6E.
10'
Lone Beach Eagle Res.
Tree Wanwaugh Res.
Gulch
13
18
17
LONE PINE RESERVOIR 1.1 MI
4223
540 000 FEET
T.45N.
TRAIL
24
19
20
Saguache
JEEP
4222
Mill
4221
R5E
R6E
25
30
29
Fielding
1 750 000 FEET
381
NORTH PASS 15 MI
382
383

TRICKLE MOUNTAIN WILDLIFE HABITAT AREA

Purpose: The management objectives of this Habitat Management Plan (HMP) are directed towards improving habitat components for the designated priority species listed below. Accomplishing these objectives will also result in beneficial habitat improvement for a variety of nongame and small game species.

In general, the habitat for the priority species within the WHA is in good condition. However, some improvement is needed to insure that the populations are maintained or are able to reach "Reasonable Numbers." This is a cooperative effort between BLM, USFS and DOW on 147,230 acres of land.

General: Improve 60,000 acres of Public Lands within the WHA to enhance the area for wildlife and support:

2,500 big game hunter days per year
5,000 small game and varmint hunter and trapping days per year
750 fisherman days per year
6,000 non-consumptive visitor days per year

Develop a comprehensive transportation plan in the planning unit to protect those wildlife values listed below from on and off-road travel.

Bighorn Sheep: Improve habitat conditions within the WHA to support the bighorn sheep population which utilizes the crucial winter range (Figure 4) around Trickle Mountain from 300 to 350 head (or to 500 head if it becomes possible later without precipitating a lung worm related dieoff) and protect 1,800 acres of crucial bighorn sheep winter range and provide additional winter forage.

Elk: Improve or maintain habitat conditions on 60,000 acres of winter elk range within the WHA to allow for an increase in the elk population from the present 300-350 to 350-400 in five years.

Mule Deer: Improve habitat conditions on 20,000 acres of crucial mule deer winter range and 60,000 acres of year-long range to allow for an increase in the deer population from the present maximum of 500 to a maximum of 750 in five years.

Pronghorn: Improve or maintain about 40,000 acres of yearlong pronghorn range to allow for an increase in the WHA pronghorn population from the present 100-125 to 150 in five years.

Abert's Squirrel: Maintain approximately 3,900 acres of ponderosa pine in adequate condition to maintain the present population of Abert's squirrels in the WHA.

Raptors: Maintain and protect 15 raptor cliff nesting sites and a minimum of 5 linear miles of rimrock cliffs as suitable nesting habitat.

Fish: Establish a minimum population of 250 adult Rio Grande cutthroat trout in 2 miles of Tuttle Creek.

Improve 2 miles of Tuttle Creek's riparian habitat, pool riffle ratio and water quality to insure the continued minimum population of 250 adult Rio Grande cutthroat trout.

Improve 3 miles of aquatic/riparian habitat in Ford Creek to allow maintenance of a productive fishery and increase numbers and species diversity of terrestrial wildlife.

Decrease the sediment load being carried to the lower reaches of Sheep Creek to betwen 0.1 to 0.2 acre feet per square mile per year.

Proposed Development:
- 1 large catchment
- 1 well
- 8 small wildlife catchments
- 2 new reservoirs
- 5 reservoir improvements
- 1.5 miles fence to exclude livestock
- 18 spring exclosures
- Tuttle Creek improvement and threatened species transplant
- Ford Creek improvement and exclosures
- Allotment Management Plan implementation
- Controlled access and O.R.V. closure
- Land exchanges

Present Status:
- 5 wildlife catchments
- 6 springs exclosures
- Tuttle Creek barrier and transplant of threatened Rio Grande cutthroat
- Ford Creek pool riffle improvement and exclosures
- 1 well
- Controlled access and closure to O.R.V.
- Contract Research (C.S.U.) forage competition

Present Management Practices: Held in absence until the research is completed.

Adopted's Squirrel: Maintain approximately 2,500 acres of ponderosa pine in adequate condition to maintain the present population of Abert's squirrels in the WMA.

Ruffed: Maintain and protect 15 (open cliff nesting) sites and a minimum of 5 linear miles of riparian cliffs as available nesting habitat.

Elk: Establish a minimum population of 250 adult elk using cutthroat trout in 2 miles of Little Creek.

Improve 2 miles of Little Creek's riparian habitat, pool riffle ratio and water quality to insure the continued minimum population of 250 adult elk during cutthroat trout.

Improve 2 miles of aquatic/riparian habitat in Ford Creek to allow maintenance of a productive fishery and increase numbers and species diversity of terrestrial wildlife.

Decrease the sediment load being carried to the lower reaches of Sheep Creek to between 0.1 to 0.2 acre feet per square mile per year.

Proposed Development - 1 large catchment
- 1 well
- 5 small wildlife catchments
- 2 new reservoirs
- 2 reservoir improvements
- 1.5 miles fence to exclude livestock
- 18 spring enclosures
- Little Creek improvement and thoroughness treatment
- Riparian
- Ford Creek improvement and exclosures
- Allotment Management Plan implementation
- Controlled access and O.R.V. closure
- Land exchanges

Present Status - 5 wildlife catchments
- 6 spring exclosures
- Little Creek barrier and transplant of the native Green cutthroat
- Ford Creek pool riffle improvement and exclosure
- 1 well
- Controlled access and closure to O.R.V.
- Contract research (C.S.U.) forage competition

Present Management Practices: Wild in absence until the research is completed.

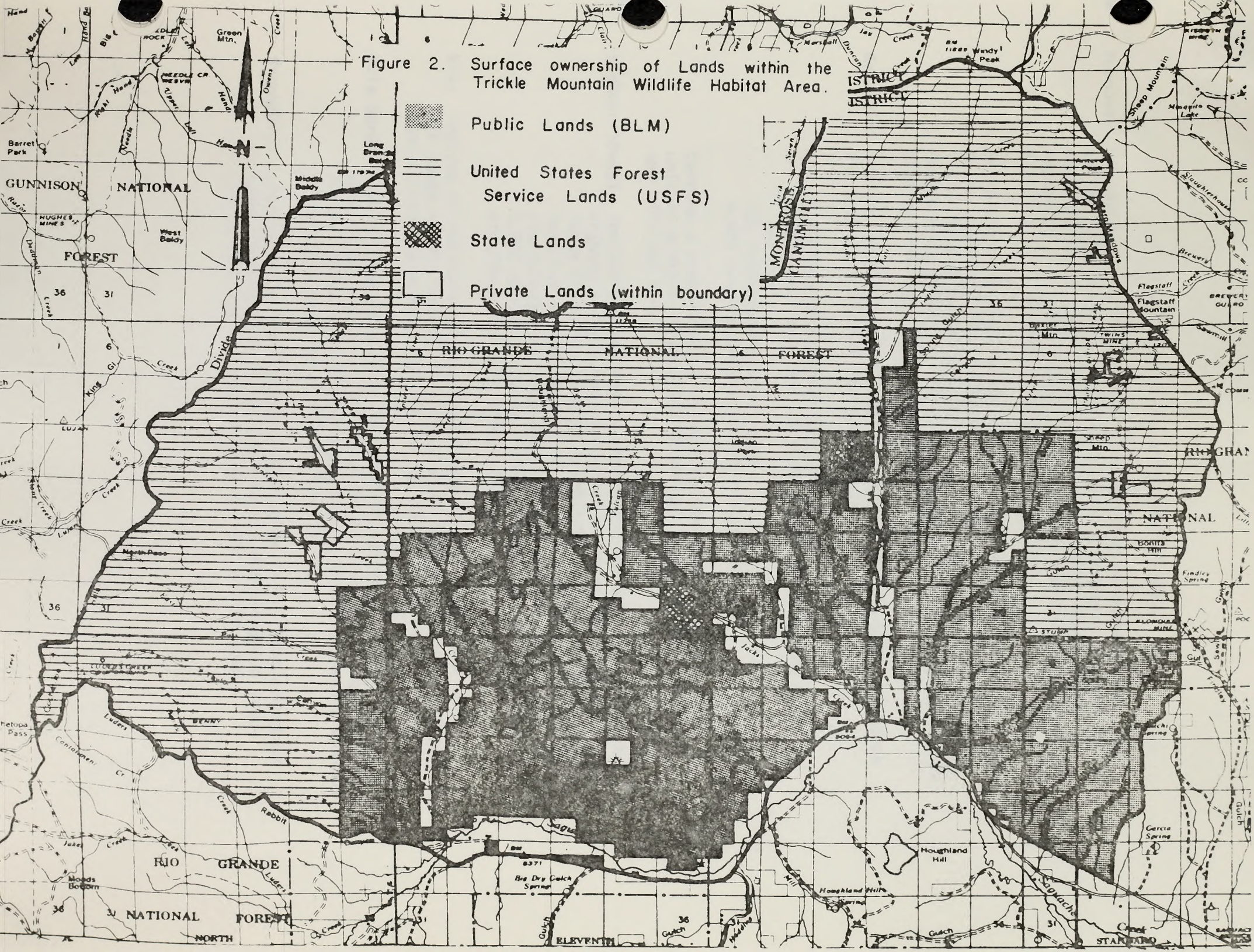


Figure 2. Surface ownership of Lands within the Trickle Mountain Wildlife Habitat Area.

TRICKLE MOUNTAIN WILDLIFE HABITAT AREA

Purpose: The management objectives of this Habitat Management Plan (HMP) are directed towards improving habitat components for the designated priority species listed below. Accomplishing these objectives will also result in beneficial habitat improvement for a variety of nongame and small game species.

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General: Improve 60,000 acres of Public Lands within the WHA to enhance the area for wildlife and support:

2,500 big game hunter days per year
5,000 small game and varmint hunter and trapping days per year
750 fisherman days per year
6,000 non-consumptive visitor days per year

Develop a comprehensive transportation plan in the planning unit to protect those wildlife values listed below from on and off-road travel.

Bighorn Sheep: Improve habitat conditions within the WHA to support the bighorn sheep population which utilizes the crucial winter range (Figure 4) around Trickle Mountain from 300 to 350 head (or to 500 head if it becomes possible later without precipitating a lung worm related dieoff) and protect 1,800 acres of crucial bighorn sheep winter range and provide additional winter forage.

Elk: Improve or maintain habitat conditions on 60,000 acres of winter elk range within the WHA to allow for an increase in the elk population from the present 300-350 to 350-400 in five years.

Mule Deer: Improve habitat conditions on 20,000 acres of crucial mule deer winter range and 60,000 acres of year-long range to allow for an increase in the deer population from the present maximum of 500 to a maximum of 750 in five years.

Pronghorn: Improve or maintain about 40,000 acres of yearlong pronghorn range to allow for an increase in the WHA pronghorn population from the present 100-125 to 150 in five years.

Abert's Squirrel: Maintain approximately 3,900 acres of ponderosa pine in adequate condition to maintain the present population of Abert's squirrels in the WHA.

Raptors: Maintain and protect 15 raptor cliff nesting sites and a minimum of 5 linear miles of rimrock cliffs as suitable nesting habitat.

Fish: Establish a minimum population of 250 adult Rio Grande cutthroat trout in 2 miles of Tuttle Creek.

Improve 2 miles of Tuttle Creek's riparian habitat, pool riffle ratio and water quality to insure the continued minimum population of 250 adult Rio Grande cutthroat trout.

Improve 3 miles of aquatic/riparian habitat in Ford Creek to allow maintenance of a productive fishery and increase numbers and species diversity of terrestrial wildlife.

Decrease the sediment load being carried to the lower reaches of Sheep Creek to betwen 0.1 to 0.2 acre feet per square mile per year.

Proposed Development:
- 1 large catchment
- 1 well
- 8 small wildlife catchments
- 2 new reservoirs
- 5 reservoir improvements
- 1.5 miles fence to exclude livestock
- 18 spring exclosures
- Tuttle Creek improvement and threatened species transplant
- Ford Creek improvement and exclosures
- Allotment Management Plan implementation
- Controlled access and O.R.V. closure
- Land exchanges

Present Status:
- 5 wildlife catchments
- 6 springs exclosures
- Tuttle Creek barrier and transplant of threatened Rio Grande cutthroat
- Ford Creek pool riffle improvement and exclosures
- 1 well
- Controlled access and closure to O.R.V.
- Contract Research (C.S.U.) forage competition

Present Management Practices: Held in absence until the research is completed.

Abert's Squirrel: Maintain approximately 2,500 acres of ponderosa pine in adequate condition to maintain the present population of Abert's squirrels in the WMA.

Raptors: Maintain and protect 15 rapper cliff nesting sites and a minimum of 3 linear miles of riparian cliffs as potential nesting habitat.

Fish: Establish a minimum population of 250 adult Rio Grande cutthroat trout in 2 miles of Turtle Creek.

Improve 2 miles of Turtle Creek's riparian habitat, and utilize rest and water quality to insure the continued minimum population of 250 adult Rio Grande cutthroat trout.

Improve 2 miles of aquatic/riparian habitat in Fort Creek to allow maintenance of a productive fishery and increase numbers and species diversity of aquatical wildlife.

Decrease the sediment load being carried to the lower reaches of Sheep Creek to between 0.1 to 0.2 acre feet per square mile per year.

Proposed-Development: - 1 large catchment
- 1 well
- 6 small wildlife catchments
- 2 new reservoirs
- 7 reservoir improvements
- 1.5 miles fence to exclude livestock
- 10 spring enclosures
- Turtle Creek improvement and threatened species transplant
- Fort Creek improvement and enclosures
- Allotment Management Plan implementation
- Controlled access and O.R.V. closure
- Land exchanges

Present Status: - 2 wildlife catchments
- 4 spring enclosures
- Turtle Creek barrier and transplant of threatened Rio Grande cutthroat
- Fort Creek pool riffle improvement and enclosures
- 1 well
- Controlled access and closure to O.R.V.
- Contract Research (C.S.U.) Forage competition

Present Management Practices: Hold in abeyance until the research is completed.

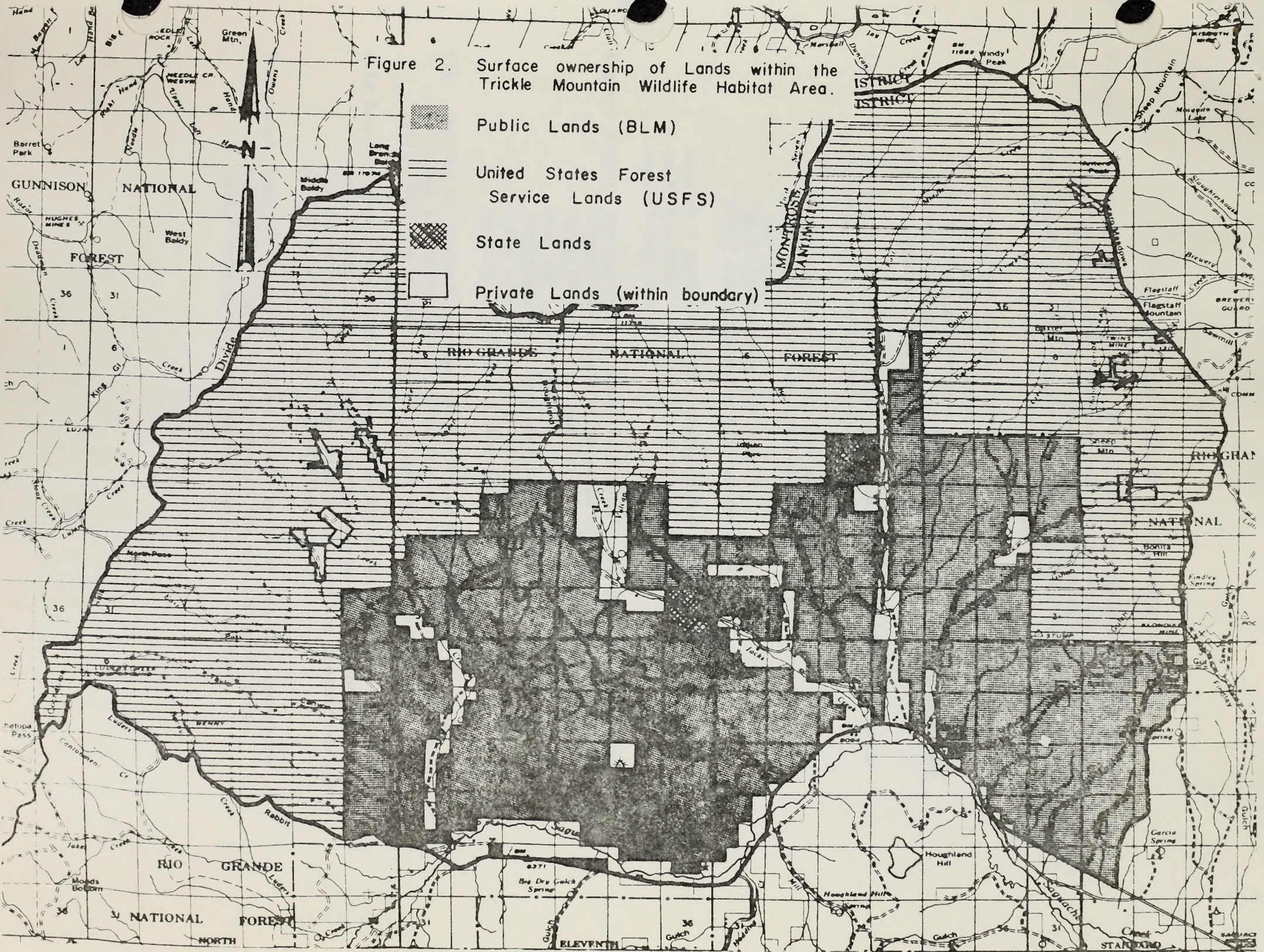

Figure 2. Surface ownership of Lands within the Trickle Mountain Wildlife Habitat Area.

TRICKLE MOUNTAIN WILDLIFE HABITAT AREA

Purpose: The management objectives of this Habitat Management Plan (HMP) are directed towards improving habitat components for the designated priority species listed below. Accomplishing these objectives will also result in beneficial habitat improvement for a variety of nongame and small game species.

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General: Improve 60,000 acres of Public Lands within the WHA to enhance the area for wildlife and support:

2,500 big game hunter days per year
5,000 small game and varmint hunter and trapping days per year
750 fisherman days per year
6,000 non-consumptive visitor days per year

Develop a comprehensive transportation plan in the planning unit to protect those wildlife values listed below from on and off-road travel.

Bighorn Sheep: Improve habitat conditions within the WHA to support the bighorn sheep population which utilizes the crucial winter range (Figure 4) around Trickle Mountain from 300 to 350 head (or to 500 head if it becomes possible later without precipitating a lung worm related dieoff) and protect 1,800 acres of crucial bighorn sheep winter range and provide additional winter forage.

Elk: Improve or maintain habitat conditions on 60,000 acres of winter elk range within the WHA to allow for an increase in the elk population from the present 300-350 to 350-400 in five years.

Mule Deer: Improve habitat conditions on 20,000 acres of crucial mule deer winter range and 60,000 acres of year-long range to allow for an increase in the deer population from the present maximum of 500 to a maximum of 750 in five years.

Pronghorn: Improve or maintain about 40,000 acres of yearlong pronghorn range to allow for an increase in the WHA pronghorn population from the present 100-125 to 150 in five years.

Abert's Squirrel: Maintain approximately 3,900 acres of ponderosa pine in adequate condition to maintain the present population of Abert's squirrels in the WHA.

Raptors: Maintain and protect 15 raptor cliff nesting sites and a minimum of 5 linear miles of rimrock cliffs as suitable nesting habitat.

Fish: Establish a minimum population of 250 adult Rio Grande cutthroat trout in 2 miles of Tuttle Creek.

Improve 2 miles of Tuttle Creek's riparian habitat, pool riffle ratio and water quality to insure the continued minimum population of 250 adult Rio Grande cutthroat trout.

Improve 3 miles of aquatic/riparian habitat in Ford Creek to allow maintenance of a productive fishery and increase numbers and species diversity of terrestrial wildlife.

Decrease the sediment load being carried to the lower reaches of Sheep Creek to betwen 0.1 to 0.2 acre feet per square mile per year.

Proposed Development:
- 1 large catchment
- 1 well
- 8 small wildlife catchments
- 2 new reservoirs
- 5 reservoir improvements
- 1.5 miles fence to exclude livestock
- 18 spring exclosures
- Tuttle Creek improvement and threatened species transplant
- Ford Creek improvement and exclosures
- Allotment Management Plan implementation
- Controlled access and O.R.V. closure
- Land exchanges

Present Status:
- 5 wildlife catchments
- 6 springs exclosures
- Tuttle Creek barrier and transplant of threatened Rio Grande cutthroat
- Ford Creek pool riffle improvement and exclosures
- 1 well
- Controlled access and closure to O.R.V.
- Contract Research (C.S.U.) forage competition

Present Management Practices: Held in absence until the research is completed.

Aberta's Squirrel: Maintain approximately 5,000 acres of ponderosa pine in adequate condition to maintain the present population of Aberta's squirrels in the UMA.

Raptors: Maintain and protect 15 raptor nest sites and a minimum of 5 timber miles of riparian cliffs as suitable nesting habitat.

Fish: Establish a minimum population of 250 adult Rio Grande cutthroat trout in 2 miles of Turtle Creek.

Improve 2 miles of Turtle Creek's riparian habitat, riparian habitat and water quality to insure the continued minimum population of 250 adult Rio Grande cutthroat trout.

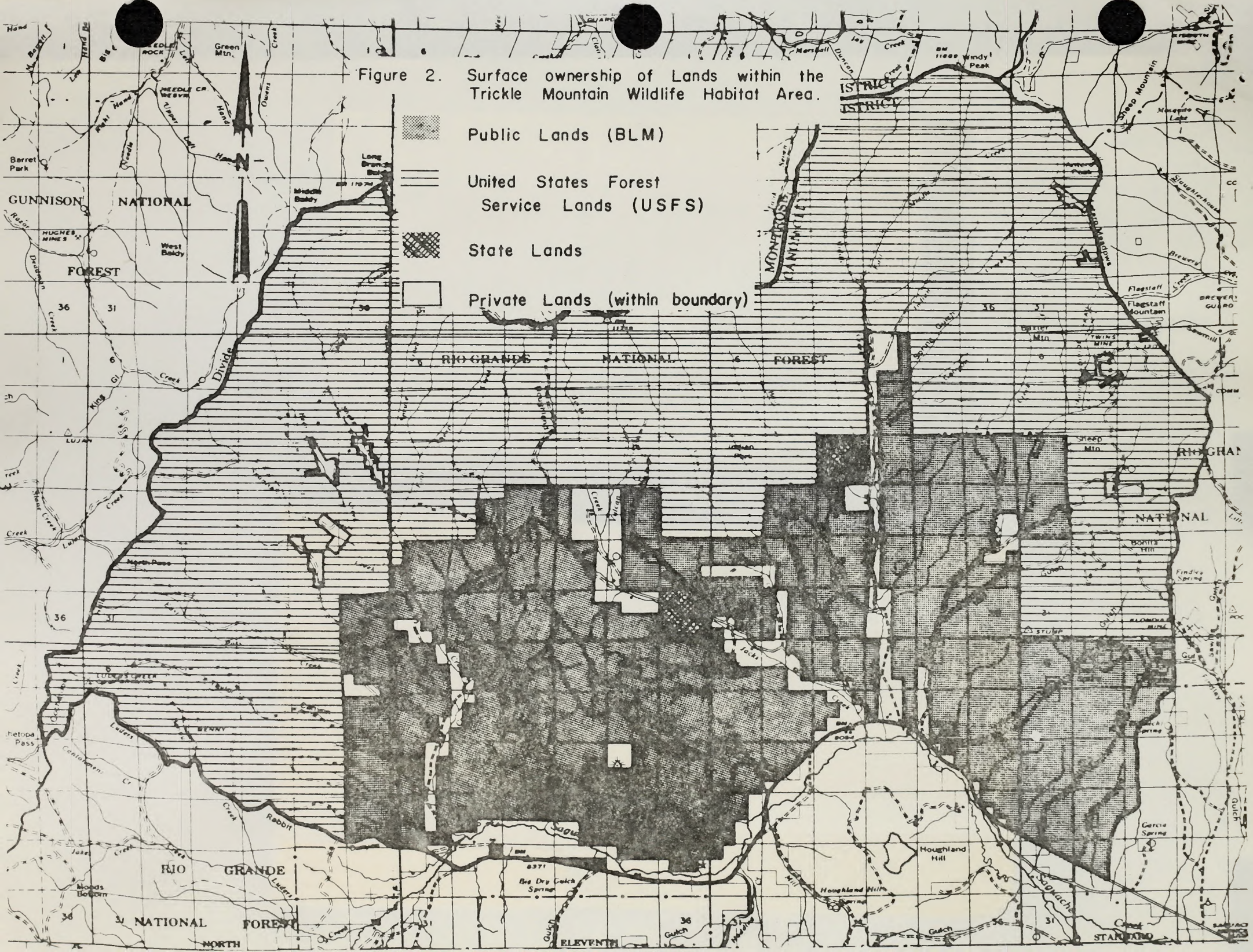
Improve 3 miles of beaver/riparian habitat in Ford Creek to allow maintenance of a productive fishery and increase numbers and species diversity of terrestrial wildlife.

Decrease the sediment load being carried to the lower reaches of Steep Creek to between 0.1 to 0.2 acre feet per square mile per year.

Proposed Development - 1 large catchment
- 1 small
- 9 small wildlife catchments
- 2 new reservoirs
- 5 reservoir improvements
- 1.5 miles fence to exclude livestock
- 10 spring enclosures
- Turtle Creek improvement and threatened species transplant
- Ford Creek improvement and enclosures
- Allotment Management Plan implementation
- Controlled access and O.R.V. closure
- Land exchange

Present status: - 5 wildlife catchments
- 6 spring enclosures
- Turtle Creek barrier and transplant of threatened fish
- Steep outcrops
- Ford Creek pool riffle improvement and enclosure
- 1 well
- Controlled access and closure to O.R.V.
- Contract Research (T.S.U.) forage competition.

Reason Management Practices: Wait in abeyance until the research is completed.


Public Lands (BLM)
United States Forest Service Lands (USFS)
State Lands
Private Lands (within boundary)
GUNNISON NATIONAL FOREST
RIO GRANDE NATIONAL FOREST
RIO GRANDE NATIONAL FOREST
Green Mtn.
Barret Park
West Baldy
Divide
Sheep Mtn.
Flagstaff Mountain
Houghland Hill
Rabbit
Big Dry Gulch Spring
Sagauche
Sheep Mountain
Meadows
Brewery Gulch
Garcia Spring
Findley Spring
Bonita Hill
Batter Mtn.
Twins Mine
Florida Mine
Stump
Lucas Creek
Benny
Contoment Cr.
Moods Bottom
Eleventh
Standard
Hughes Mines
Needle Rock
Needle Cr.
Upper Hand
Lower Hand
Razor
Drabenon
Creek
King Gl.
Lujan
Shed Creek
Luers
North Pass
Chetopa Pass
Jose Creek
Luders
Sagauche
Gulch
Meadow
Hand
Big Hand
Big Creek
Lee Hand
Rabbit Hand
Owens
Creek
Middle Baldy
Long Branch Bldg.
Sawmill Gulch
Sawmill Creek
Pelican
Creek
Jocks
Sand Gulch
Sawmill
Steep Mountain
Slaughterhouse
Mosquito Lake
Windy Peak
Marshall
Duncan
Clark
Guard
Hand
Bargath
Lee
Big
Creek
Gulch
Spring
Mill
Hill
Spring
Gulch
Creek
Gulch
Gulch
Gulch

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